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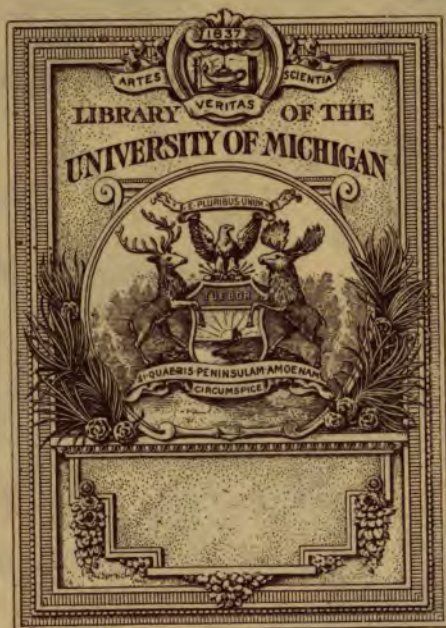
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KANSAS
HORTICULTURAL REPORT,

FOR THE YEAR 1878.

BEING THE

PROCEEDINGS OF THE STATE HORTICULTURAL SOCIETY, AT ITS EIGHTH SEMI-ANNUAL MEETING, HELD AT GARNETT, ANDERSON COUNTY, ON WEDNESDAY AND THURSDAY, JUNE 19 AND 20; AND THE TWELFTH ANNUAL MEETING HELD AT OTTAWA, FRANKLIN COUNTY, ON TUESDAY, WEDNESDAY AND THURSDAY, DECEMBER 3, 4, AND 5, 1878; TOGETHER WITH THE PROCEEDINGS OF DIVISION, COUNTY AND LOCAL SOCIETIES.

EDITED BY THE SECRETARY.

VOL. VIII.

PUBLISHED BY THE SOCIETY.



TOPEKA:

GEO. W. MARTIN, KANSAS PUBLISHING HOUSE.
1879.

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FRUIT DISTRICTS.**1.—NORTHERN DISTRICT.**

ATCHISON,
BROWN,
CLAY,
CLOUD,
DAVIS,
DICKINSON,
DONIPHAN,
ELLIS,

ELLSWORTH,
JEWELL,
JACKSON,
JEFFERSON,
LEAVENWORTH,
LINCOLN,
MARSHALL,
MITCHELL,

NEMAHA,
OSBORNE,
POTTAWATOMIE,
PHILLIPS,
REPUBLIC,
RILEY,
ROOKS,

RUSSELL,
SMITH,
SHAWNEE,
SALINE,
TREGO,
WYANDOTTE,
WASHINGTON.

2.—CENTRAL DISTRICT.

ANDERSON,
BARTON,
COFFEY,
CHASE,
DOUGLAS,
EDWARDS,

FRANKLIN,
HARVEY,
HODGEMAN,
JOHNSON,
LINN,
LYON,

MARION,
MIAMI,
MORRIS,
McPHERSON,
OSAGE,

PAWNEE,
RENO,
RICE,
RUSH,
WABAUNSEE.

3.—SOUTHERN DISTRICT.

ALLEN,
BARBOUR,
BOURBON,
BUTLER,
CRAWFORD,
CHEROKEE,

COWLEY,
CHAUTAUQUA,
COMANCHE,
ELK,
FORD,

GREENWOOD,
HARPER,
KINGMAN,
LABETTE,
MONTGOMERY,

NEOSHO,
SEDGWICK,
SUMNER,
WILSON,
WOODSON.

OFFICERS AND STANDING COMMITTEES FOR 1879.

OFFICERS.

President,

PROF. E. GALE, MANHATTAN, RILEY COUNTY.

Vice President,

DR. WM. M. HOWSLEY, LEAVENWORTH, LEAVENWORTH COUNTY.

Secretary,

G. C. BRACKETT, LAWRENCE, DOUGLAS COUNTY.

Treasurer,

FRED. WELLHOUSE, LEAVENWORTH, LEAVENWORTH COUNTY.

Trustees,

H. E. VAN DEMAN, GENEVA, ALLEN COUNTY. M. B. NEUMAN, WYANDOTTE, WYANDOTTE COUNTY.

W. E. BARNES, VINLAND, DOUGLAS COUNTY.

STANDING COMMITTEES.

Nomenclature,

DR. WM. M. HOWSLEY, LEAVENWORTH.

Botany and Vegetable Physiology,

J. W. ROBSON, CHEEVER.

Entomology,

PROF. F. H. SNOW, STATE UNIVERSITY, LAWRENCE.

Orchard Culture,

FRED. WELLHOUSE, LEAVENWORTH.

Forestry,

J. B. SCHLICHTER, STERLING.

Small Fruits,

J. W. LATIMER, PLEASANTON.

Floriculture,

G. Y. JOHNSON, LAWRENCE.

Vegetable Gardening,

WM. CUTTER, JUNCTION CITY.

Handling Fruit,

D. G. WATT, LAWRENCE.

Meteorology,

PROF. F. HAWN, LEAVENWORTH.

Vine Culture,

W. E. BARNES, VINLAND.

LIST OF MEMBERS.

HONORARY MEMBERS.

(In the order in which they were enrolled.)

N. J. COLMAN,	<i>St. Louis, Mo.</i>	PROF. C. V. RILEY,	<i>Washington, D. C.</i>
DR. L. D. MORSE,	<i>St. Louis, Mo.</i>	PROF. JOHN H. TICE,	<i>Washington, D. C.</i>
C. W. MURTFELDT,	<i>St. Louis, Mo.</i>	SAM. MILLER,	<i>Sedalia, Mo.</i>
WM. KING,	<i>St. Louis, Mo.</i>	PROF. S. T. KELSEY,	<i>Highlands, N. C.</i>
DR. JOHN A. WARDER,	<i>Cleves, Ohio.</i>		

LIFE MEMBERS.

(In the order and year they were enrolled.)

G. C. BRACKETT,	<i>Lawrence,</i>	1868	FRED. WELLHOUSE,	<i>Leavenworth, 1877</i>
DR. WM. M. HOWSLEY,	<i>Leavenworth, 1875</i>		A. ALLEN,	<i>Wabaussee,</i>
C. G. WICKERSHAM,	<i>Parsons,</i>	1876	JOHNSON CO. HORT. SOC'Y, <i>Olathe,</i>	1877
DR. J. M. DEBALL,	<i>Fontana,</i>	1876	GEO. Y. JOHNSON,	<i>Lawrence,</i>
PROF. E. GALE,	<i>Manhattan,</i>	1876	R. MILLIKEN,	<i>Emporia,</i>
H. E. VAN DEMAN,	<i>Geneva,</i>	1876	A. A. ADAMS,	<i>Garnett,</i>
MANHATTAN HORT. SOC'Y,			W. E. FOSNOT,	<i>Ellsworth,</i>
SECRETARY'S OFFICE,	<i>Manhattan,</i>	1876		

MEMBERS FOR 1878.

(Enrolled *ad interim*.)

BEST, W. J.,	<i>Emporia.</i>	HURLBURT, T. L.,	<i>Emporia.</i>
BUCHER, S.,	<i>Emporia.</i>	HOLLINGSWORTH, WM.,	<i>Emporia.</i>
CUTTER, WM.,	<i>Junction City.</i>	PERLEY, I. E.,	<i>Emporia.</i>
CHAPIN, J. S.,	<i>Independence.</i>	STANLEY, D.,	<i>Americus.</i>
DIXON, S. M.,	<i>Plymouth.</i>	TANDY, A. S.,	<i>Emporia.</i>
ERNST, JOS.,	<i>Americus.</i>	TRUEWORTHY, J. W.,	<i>Emporia.</i>
HAVER, L.,	<i>Americus.</i>	YOUNG, J. A.,	<i>Emporia.</i>
HERITAGE, L. T.,	<i>Emporia.</i>		

ANNUAL MEMBERS.

(Enrolled at Eighth Semi-Annual Meeting, whose term expires June, 1879.)

DEWEY, C. E.,	<i>Garnett.</i>	WATT, D. G.,*	<i>Lawrence.</i>
HUNT, J. F.,	<i>Garnett.</i>	WARD, PROF. M. L.,*	<i>Manhattan.</i>
MERRIAM, J. Q.,*	<i>Garnett.</i>	WALKER, L. A.,*	<i>Independence.</i>
PAGE, M. A.,*	<i>Garnett.</i>	WILLIAMS, J. L.,*	<i>Onego.</i>
SLONAKER, R. M.,	<i>Garnett.</i>	WELSH, H. P.,*	<i>Ottawa.</i>
TIPTON, S. S.,	<i>Mineral Point.</i>		

LADY MEMBERS.

BOURN, MRS. V. C.,	<i>Garnett.</i>	SELBY, MISS A.,	<i>Garnett.</i>
EVERETT, MRS. L.,	<i>Garnett.</i>	VAN SICKLE, MISS A.,	<i>Garnett.</i>
EVERLINE, MISS E.,	<i>Garnett.</i>	VINES, MISS M.,	<i>Garnett.</i>
HOUSTON, MRS. D. W.,	<i>Garnett.</i>	WHITFORD, MRS. J. Q.,	<i>Garnett.</i>
KAUFFMAN, MRS. S.,	<i>Garnett.</i>		

*Delegates entitled to membership.

ANNUAL MEMBERS FOR 1879.
(Enrolled at the Twelfth Annual Meeting.)

ADAMS, A. A.,*	Garnett.	NORTHCRAFT, A. G.,	Abilene.
BARNES, W. E.,	Vinland.	PERLEY, H.,	Spring Hill.
COLEMAN, E. A.,*	Lawrence.	PLASKET, WM.,	Baldwin City.
CRUST, B. M.,	Stanley.	PICKERELL, W. T.,	Ottawa.
DEMING, N. P.,	Lawrence.	ROBSON, J. W.,*	Cheever.
GRAHAM, C. H.,	Leroy.	SEARS, JUDGE T. C.,	Ottawa.
HENRY, T. C.,	Abilene.	TURNER, A. G.,	Williamsburg.
KELSO, J. C.,	Humboldt.	WALKER, L. A.,*	Independence.
KELSEY, H.,	Ottawa.	WAUGH, G. M.,*	Gardner.
LATIMER, J. W.,*	Pleasanton.	WELSH, H. P.,	Ottawa.
LEWIS, J. W.,	Olathe.	WHEELER, WM.,	Ottawa.
NEUMAN, M. B.,*	Wyandotte.		

LADY MEMBERS.

JOHNSON, MRS. M. H.,	Lawrence.	WELSH, MRS. J. A.,	Ottawa.
WAUGH, MRS. HATTIE,	Gardner.		

*Delegates entitled to a membership.

MEMBERS FOR 1879.
(Enrolled *ad interim*.)

BISHOP, L.,	Oswatimie.	CHEVALIER, C. C.,	Garfield.
BOHRER, DR. G.,	Raymond.	DETHERRIDGE, I.,	Pine.
BUCKMAN, T.,	Topeka.	NORRIS, J. ROBERT,	Lincoln, Neb.
BUCKMAN, A. H.,	Topeka.	RALPH, M. A.,	Wichita.
CHASE, ASHBY,	Crocker City.		

DELEGATES TO THE EIGHTH SEMI-ANNUAL MEETING.

SOUTHEASTERN HORTICULTURAL SOCIETY,	H. E. VAN DEMAN,	Geneva.
ANDERSON COUNTY HORTICULTURAL SOCIETY,	A. A. ADAMS,	Garnett.
	D. W. HOUSTON,	Garnett.
	M. A. PAGE,	Garnett.
BOURBON COUNTY HORTICULTURAL SOCIETY,	J. Q. MERRIAM,	Fort Scott.
DOUGLAS COUNTY HORTICULTURAL SOCIETY,	D. G. WATT,	Lawrence.
	GEO. Y. JOHNSON,	Lawrence.
FRANKLIN COUNTY HORTICULTURAL SOCIETY,	H. P. WELSH,	Ottawa.
	E. J. NUENT,	Ottawa.
	I. PILE,	Ottawa.
LABETTE COUNTY HORTICULTURAL SOCIETY,	J. L. WILLIAMS,	Oswego.
LYON COUNTY HORTICULTURAL SOCIETY,	ROBT. MILLIKEN,	Emporia.
MANHATTAN HORTICULTURAL SOCIETY,	PROF. M. L. WARD,	—
MONTGOMERY COUNTY HORTICULTURAL SOCIETY,	L. A. WALKER,	Independence.
	C. T. CHAPIN,	Independence.

DELEGATES TO TWELFTH ANNUAL MEETING.

SOUTHEASTERN HORTICULTURAL SOCIETY,	J. W. LATIMER,	Pleasanton.
ANDERSON COUNTY HORTICULTURAL SOCIETY,	A. A. ADAMS,	Garnett.
DOUGLAS COUNTY HORTICULTURAL SOCIETY,	E. A. COLEMAN,	Lawrence.
JOHNSON COUNTY HORTICULTURAL SOCIETY,	G. M. WAUGH,	Gardner.
	H. PERLEY,	Spring Hill.
	B. M. CRUST,	Stanley.
MONTGOMERY COUNTY HORTICULTURAL SOCIETY,	L. A. WALKER,	Independence.
MANHATTAN HORTICULTURAL SOCIETY,	PROF. E. GALE,	Manhattan.
DICKINSON COUNTY HORTICULTURAL SOCIETY,	J. W. ROBSON,	Cheever.
WYANDOTTE COUNTY HORTICULTURAL SOCIETY,	M. B. NEUMAN,	Wyandotte.

LIST OF DIVISION, COUNTY AND LOCAL SOCIETIES.

NORTHWESTERN DIVISION SOCIETY,	E. A. TAYLOR, Secretary,	<i>Beloit.</i>
SOUTHEASTERN DIVISION SOCIETY,	G. W. ASHBY, Secretary,	<i>Chanute.</i>
ANDERSON COUNTY SOCIETY,	M. A. PAGE, Secretary,	<i>Garnett.</i>
BOURBON COUNTY SOCIETY,	J. B. SAXE, Secretary,	<i>Fort Scott.</i>
BUTLER COUNTY SOCIETY,	E. R. ROWELL, Secretary,	<i>Augusta.</i>
CRAWFORD COUNTY SOCIETY,	G. W. MOSTELLER, Secretary,	<i>Girard.</i>
COTTONWOOD HORTICULTURAL CLUB,	J. W. BYRAM, Secretary,	<i>Cedar Point.</i>
CHASE COUNTY SOCIETY,	J. W. BYRAM, Secretary,	<i>Cedar Point.</i>
DOUGLAS COUNTY SOCIETY,	Jos. SAVAGE, Secretary,	<i>Lawrence.</i>
DICKINSON COUNTY SOCIETY,	J. W. ROBSON, Secretary,	<i>Cheever.</i>
FRANKLIN COUNTY SOCIETY,	H. P. WELSH, Secretary,	<i>Ottawa.</i>
JACKSON COUNTY SOCIETY,	V. V. ADAMSON, Secretary,	<i>Holton.</i>
JOHNSON COUNTY SOCIETY,	E. P. DEIHL, Secretary,	<i>Olathe.</i>
LABETTE COUNTY SOCIETY,	N. SANFORD, Secretary,	<i>Oswego.</i>
LEAVENWORTH COUNTY SOCIETY,	A. G. CHANDLER, Secretary,	<i>Leavenworth.</i>
LYON COUNTY SOCIETY,	PERRY EDWARDS, Secretary,	<i>Emporia.</i>
MANHATTAN HORTICULTURAL SOCIETY,	AMBROSE TODD, Secretary,	<i>Manhattan.</i>
MIAMI COUNTY SOCIETY,	E. W. ROBINSON, Secretary,	_____
MONTGOMERY COUNTY SOCIETY,	L. A. WALKER, Secretary,	<i>Independence.</i>
NEOSHO COUNTY SOCIETY,	Mrs. J. H. SKEELS, Secretary,	<i>Galesburg.</i>
PAWNEE COUNTY SOCIETY,	R. B. GEE, Secretary,	<i>Garfield.</i>
RENO COUNTY SOCIETY,	L. J. TEMPLIN, Secretary,	<i>Hutchinson.</i>
RICE COUNTY SOCIETY,	J. H. STUBBS, Secretary,	<i>Sterling.</i>
WABAUNSEE COUNTY SOCIETY,	H. A. STILES, Secretary,	<i>Pavilion.</i>
WYANDOTTE COUNTY SOCIETY,	M. B. NEUMAN, Secretary,	<i>Wyandotte.</i>

CERTIFICATE OF INCORPORATION.

We, the undersigned citizens of Kansas, do hereby associate ourselves as a body corporate, to be known as the KANSAS STATE HORTICULTURAL SOCIETY, for the promotion of horticultural and pomological science in the State of Kansas.

The principal office or place of business of said Society shall be at the city of Lawrence, or such other place in the State of Kansas as the Society may designate at a regular meeting thereof.

The number of Trustees of said Society shall be seven, and such Trustees shall have power to make all necessary rules and by-laws for the government of said Society and the transaction of its business.

Said Society shall have succession, under the provisions of this charter and the laws of the State of Kansas, for the term of nine hundred and ninety-nine years.

In witness of all which, we have hereunto set our hands and seals, at the city of Ottawa, in the county of Franklin, in said State of Kansas, this fifteenth day of December, A. D. 1869.

WM. TANNER, *Leavenworth.*

G. C. BRACKETT, *Lawrence.*

C. B. LINES, *Wabaunsee.*

GEO. T. ANTHONY, *Leavenworth.*

WM. M. HOWSLEY, *Leavenworth.*

J. STAYMAN, *Leavenworth.*

S. T. KELSEY, *Pomona.*

STATE OF KANSAS, }
COUNTY OF DOUGLAS, } ss.

On this 15th day of December, 1869, before me, a notary public in and for said county, came William Tanner of Leavenworth county, Charles B. Lines of Wabaunsee county, William M. Howsley of Leavenworth county, S. T. Kelsey of Franklin county, George C. Brackett of Douglas county, George T. Anthony of Leavenworth county, J. Stayman of Leavenworth, to me personally known to be the identical persons described in and who signed the above charter, and acknowledged the same to be their own act and deed for the purposes therein.

[SEAL.]

JAMES CHRISTIAN,

Notary Public, Douglas County.

I, W. H. Smallwood, Secretary of State of Kansas, do hereby certify that the foregoing is a true and correct copy of the original certificate of incorporation, filed in my office December 20, A. D. 1869.

In testimony whereof, I have hereunto subscribed my name and affixed the great seal
 { GREAT SEAL } of the State. Done at Topeka, this twenty-ninth day of
 { OF KANSAS. } August, A. D. 1871.

W. H. SMALLWOOD, *Secretary of State.*

CONSTITUTION.

ARTICLE I. This association shall be known as the KANSAS STATE HORTICULTURAL SOCIETY.

ART. II. Its object shall be the advancement of the science and art of horticulture.

ART. III. Its membership shall consist of annual members, paying an annual fee of one dollar; of life members, paying a fee of ten dollars at one time; and of honorary members, who shall be persons only of distinguished merit in horticulture, and shall be elected to membership by a vote of the Society.

ART. IV. Its officers shall consist of a President, Vice President, Secretary, and Treasurer, who shall be elected by ballot at each annual meeting of the Society, and shall hold their office for the term of one year or until their successors shall be elected. They shall perform the duties usually devolving upon such officers, and shall be *ex officio* members of the Board of Trustees, consisting of the above-named officers and three other members, who shall be elected and hold their term of office as the other officers. Said Board shall, under the direction of the Society, manage all its affairs.

ART. V. It shall hold an annual meeting in the month of December, and a semi-annual meeting in the month of June, at such time and place as the Society or Board of Trustees may direct.

ART. VI. This Constitution may be amended at any annual meeting of the Society, by a two-thirds vote of the members present.

The following was adopted as an additional article to the Constitution, at the Seventh Annual Meeting, December 2, 1873:

ART. VII. There shall be a vice president annually appointed from each county in the State, whose duty it shall be to organize local horticultural societies in their respective counties, whenever practicable; to report at each annual meeting on the general subject of fruit culture in their respective counties; and to look after the general interests of horticulture in their particular localities.

AMENDMENTS.

Article three was amended at the Fifth Annual Meeting, December 19, 1871, by the following resolution:

Resolved, That article three of the Constitution be so amended that all annual memberships shall expire on the morning of the second day of the next annual meeting, and all semi-annual memberships shall expire on the morning of the second day of the next semi-annual meeting.

Also amended at the Ninth Annual Meeting, December 15, 1875, so as to read:

Ladies attending the meetings of the Society may become members without fee; and two delegates from each of the district horticultural societies, and one delegate from other auxiliary horticultural societies organized under the general statutes of the State of Kansas, attending the meetings of this Society, shall be entitled to a membership without payment of the usual fee.

Also amended at the Tenth Annual Meeting, December 5, 1876, so as to read:

Of life members paying a fee of ten dollars, in four annual installments of two dollars and a half each.

Also, the following additional provision:

That the office of secretary of any district, county and local horticultural society, may be made a perpetual membership, upon the terms provided for a life-membership.

STATE LAWS.

BIRD LAW OF 1877.

AN ACT for the protection of birds, and to repeal chapter eighty-two of laws of eighteen hundred and seventy-six.

Be it enacted by the Legislature of the State of Kansas :

SECTION 1. That it shall be unlawful for any person or persons, at any time, to catch, kill or trap, net or ensnare, or to pursue with such intent, any wild bird, except the wild goose, duck, hawk, owl and snipe; and any person or persons violating the provisions of this act shall be fined in any sum not more than fifteen dollars nor less than five dollars, for each and every offense, to be recovered in any court of competent jurisdiction, in the proper county: *Provided*, That it shall not be unlawful to kill the prairie chicken between the first day of August and the first day of February; and it shall not be unlawful to kill quail from the first day of October to the first day of January of each year: *And provided further*, It shall not be necessary on the trial of any action or prosecution to prove the true name of the bird caught, killed, trapped, netted or ensnared, it being sufficient to show that a wild bird other than those excepted in this act was caught, killed, trapped, netted or ensnared by the defendant or defendants.

SEC. 2. It shall be unlawful for any person intentionally to destroy or remove from the nest of any wild bird any eggs or the young of such bird, or for any purpose to buy, sell, or have in possession, or traffic in such eggs, or willfully destroy the nest of any wild bird; and any person so offending, on conviction thereof, shall be fined in the sum of five dollars for each and every offense.

SEC. 3. It shall be unlawful for any person, railroad corporation, or express company, or any common carrier, knowingly, to transport, or to ship, or to receive for the purpose of transporting or shipping, any wild bird in or out of the State of Kansas; and any common carrier so offending shall be fined in the sum of one hundred dollars for each and every offense, to be recovered in an action brought in the name of the State of Kansas by any person against such person, corporation or company, before any court of competent jurisdiction, in any county into or through which said game may be taken; and any agent of any such person, corporation or company, who shall knowingly violate any of the provisions of this section, by receiving or shipping any such game, as the agent of such person, corporation or company, shall, on conviction thereof, be fined in a sum not less than ten nor more than fifty dollars for each offense; and the having in possession any wild bird, dead or alive, shall be deemed and held as *prima facie* evidence that the same were killed or taken by the company, corporation or persons having possession of the same, in violation of the provisions of this act: *Provided*, That such penalty shall not apply to the transportation of such wild birds in transit through this State from other States and Territories, or to the importation of insectivorous birds.

SEC. 4. The provisions of this act shall not apply to any person who shall kill or catch any wild bird or birds for the sole purpose of preserving them as specimens for scientific purposes, nor to any person who shall collect the eggs or nests of any wild bird for such scientific purposes: *Provided*, That in a prosecution for the violation of any of the provisions of this act, it shall not be necessary for the prosecution to prove that the killing or catching of any wild bird, or the taking of the nests or eggs, as the case may be, was not done for scientific purposes.

SEC. 5. All prosecutions or suits under this act shall be commenced within three months after the offense is alleged to have been committed; and the court before whom any action is prosecuted under the provisions of this act shall tax as part of the costs of the case

against the defendant, on conviction, the sum of ten dollars, to be paid when collected to the attorney prosecuting such action.

SEC. 6. Chapter eighty-two of the session laws of eighteen hundred and seventy-six is hereby repealed.

SEC. 7. This act shall take effect and be in force from and after its publication in the *Commonwealth*.

Approved March 5, 1877.

CHAPTER CXIII, GENERAL STATUTES.

AN ACT to prevent certain trespasses.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. If any person shall cut down, injure or destroy, or carry away any tree placed or growing for use, shade or ornament, or any timber, etc., etc., the party so offending shall pay the injured treble the value of the thing so injured, etc., with costs, and shall be deemed guilty of a misdemeanor, and shall be subject to a fine not exceeding five hundred dollars.

Approved March 3, 1868.

KANSAS STATE HORTICULTURAL SOCIETY.

AN ACT making an appropriation for the Kansas State Horticultural Society for the fiscal years ending June 30, A. D. 1880, and June 30, A. D. 1881.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That the sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1880, and the further sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1881, are hereby appropriated to the Kansas State Horticultural Society, out of any funds not otherwise appropriated.

SEC. 2. That the Auditor of State is hereby authorized to issue his warrants upon the Treasurer of State in favor of the Treasurer of the Kansas State Horticultural Society for the purposes and for the amounts specified in the first section of this act.

SEC. 3. That the Secretary of the Kansas State Horticultural Society shall hereafter, annually, make out and publish two thousand five hundred copies of the proceedings of the said Society, for public distribution.

SEC. 4. This act shall take effect and be in force from and after its publication in the *Weekly Commonwealth*.

Approved March 10, 1879.

UNITED STATES LAWS RELATING TO HORTICULTURE.

[GENERAL NATURE—No. 105.]

AN ACT to encourage the growth of timber on western prairies.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That any person who shall plant, protect, and keep in a healthy growing condition for ten years, forty acres of timber, the trees thereon not being more than twelve feet apart each way, on any quarter-section of any of the public lands of the United States, shall be entitled to a patent for the whole of said quarter-section at the expiration of said ten years, on making proof of such fact by not less than two credible witnesses: *Provided,* That only one quarter in any section shall be thus granted.

SEC. 2. That the person applying for the benefit of this act shall, upon application to the register of the land office in which he or she is about to make such entry, make affidavit before said register or receiver that said entry is made for the cultivation of timber, and upon filing such affidavit with said register and receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: *Provided, however,* That no certificate shall be given or patent issue therefor until the expiration of at least ten years from the date of such entry; and if at the expiration of such time, or at any time within three years thereafter, the person making such entry, or if he or she be dead, his or her heirs or legal representatives shall prove by two credible witnesses that he, she or they have planted, and for not less than ten years have cultivated and protected, such quantity and character of timber as aforesaid, they shall receive the patent for such quarter-section of land.

SEC. 3. That if at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, it shall be proven, after due notice to the party making the entry and claiming to cultivate such timber, to the satisfaction of the register of the land office, that such person has abandoned or failed to cultivate, protect, and keep in good condition such timber, then, and in that event, said land shall revert to the United States.

SEC. 4. That each and every person who, under the provisions of an act entitled "An act to secure homesteads to actual settlers on the public domain," approved May twentieth, eighteen hundred and sixty-two, or any amendment thereto, having a homestead on said public domain, who, at the end of the third year of his or her residence thereon, shall have had under cultivation, for two years, one acre of timber, the trees thereon not being more than twelve feet apart each way, and in a good, thrifty condition, for each and every sixteen acres of said homestead, shall, upon due proof of said fact by two credible witnesses, receive his or her patent for said homestead.

SEC. 5. That no land acquired under provisions of this act shall, in any event, become liable to the satisfaction of any debt or debts contracted prior to the issuing of patent therefor.

SEC. 6. That the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and receivers of the several land offices shall be entitled to receive the same compensation for any lands entered under the provisions of this that they are now entitled to receive when the same quantity of land is entered with money.

SEC. 7. That the fifth section of the act entitled "An act in addition to an act to punish crimes against the United States, and for other purposes," approved March third,

eighteen hundred and fifty-seven, shall extend to all oaths, affirmations and affidavits required or authorized by this act.

Approved March 3, 1873.

[GENERAL NATURE—No. 16.]

AN ACT to amend the act entitled "An act to encourage the growth of timber on western prairies."

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the act entitled "An act to encourage the growth of timber on western prairies," approved March third, eighteen hundred and seventy-three, be, and the same is hereby, amended so as to read as follows: That any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who shall have filed his declaration of intention to become such, as required by the naturalization laws of the United States, who shall plant, protect, and keep in a healthy, growing condition for eight years, forty acres of timber, the trees thereon not being more than twelve feet apart each way, on any quarter-section of any of the public lands of the United States, or twenty acres on any legal subdivision of eighty acres, or ten acres on any legal subdivision of forty acres, or one-fourth part of any fractional subdivision of land less than forty acres, shall be entitled to a patent for the whole of said quarter-section, or of such legal subdivision of eighty or forty acres, or fractional subdivision of less than forty acres, as the case may be, at the expiration of said eight years, on making proof of such fact by not less than two credible witnesses: *Provided*, That not more than one-quarter of any section shall be thus granted, and that no person shall make more than one entry under the provisions of this act, unless fractional subdivisions of less than forty acres are entered, which, in the aggregate, shall not exceed one quarter-section.

SEC. 2. That the person applying for the benefit of this act shall, upon application to the register of the land district in which he or she is about to make such entry, make affidavit before the register, or the receiver, or some officer authorized to administer oaths in the district where the land is situated, who is required by law to use an official seal, that said entry is made for the cultivation of timber, and upon filing said affidavit with said register and said receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified; and the party making an entry of a quarter-section under the provisions of this act shall be required to break ten acres of the land covered thereby the first year, ten acres the second year, and twenty acres the third year after the date of entry, and to plant ten acres of timber the second year, ten acres the third year, and twenty acres the fourth year after date of entry. A party making an entry of eighty acres shall break and plant, at the times hereinbefore prescribed, one-half of the quantity required of a party who enters a quarter-section, and a party entering forty acres shall break and plant, at the times hereinbefore prescribed, one-quarter of the quantity required of a party who enters a quarter-section, or a proportionate quantity for any smaller fractional subdivision: *Provided, however*, That no final certificate shall be given or patent issued for the land so entered until the expiration of eight years from the date of such entry; and, if at the expiration of such time, or at any time within five years thereafter, the person making such entry, or if he or she be dead, his or her heirs or legal representatives, shall prove, by two credible witnesses, that he, or she, or they have planted, and for not less than eight years have cultivated and protected such quantity and character of timber as aforesaid, they shall receive a patent for such quarter-section or legal subdivision of eighty or forty acres of land, or for any fractional quantity of less than forty acres, as herein provided. And in case of the death of a person who has complied with the provisions of this act for the period of three

years, his heirs or legal representatives shall have the option to comply with the provisions of this act, and receive at the expiration of eight years a patent for one hundred and sixty acres, or receive without delay a patent for forty acres, relinquishing all claim to the remainder.

SEC. 3. That if at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, the claimant shall abandon the land or fail to do the breaking and planting required by this act, or any part thereof, or shall fail to cultivate, protect and keep in good condition such timber, then, and in that event, such land shall be subject to entry under the homestead laws, or by some other person under the provisions of this act: *Provided*, That the party making claim to said land, either as a homestead settler or under this act, shall give, at the time of filing his application, such notice to the original claimant as shall be prescribed by the rules established by the Commissioner of the General Land Office, and the rights of the parties shall be determined as in other contested cases.

SEC. 4. That each and every person who, under the provisions of the act entitled "An act to secure homesteads to actual settlers on the public domain," approved May twentieth, eighteen hundred and sixty-two, or any amendment thereto, having a homestead on said public domain, who, at any time after the end of the third year of his or her residence thereon, shall, in addition to the settlement and improvements now required by law, have had under cultivation, for two years, one acre of timber, the trees thereon not being more than twelve feet apart each way, and in a good, thrifty condition, for each and every sixteen acres of said homestead, shall, upon due proof of such fact by two credible witnesses, receive his or her patent for said homestead.

SEC. 5. That no land acquired under the provisions of this act shall in any event become liable to the satisfaction of any debt or debts contracted prior to the issuing of certificate therefor.

SEC. 6. That the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and the receivers of the several land offices shall each be entitled to receive two dollars at the time of entry, and the same sum when the claim is finally established and the final certificate issued.

SEC. 7. That the fifth section of the act entitled "An act in addition to an act to punish crimes against the United States, and for other purposes," approved March third, eighteen hundred and fifty-seven, shall extend to all oaths, affirmations and affidavits required or authorized by this act.

SEC. 8. That parties who have already made entries under the act approved March third, eighteen hundred and seventy-three, of which this is amendatory, shall be permitted to complete the same upon full compliance with the provisions of this act.

Approved March 13, 1874.

[PUBLIC—No. 71.]

AN ACT for the relief of certain settlers on the public lands.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That it shall be lawful for homestead and preëmption settlers on the public lands, or preëmption settlers on Indian reservations, where crops were destroyed or seriously injured by grasshoppers in the year eighteen hundred and seventy-seven, to leave and be absent from said lands until the first day of October, eighteen hundred and seventy-eight, under such rules and regulations as to proof of the same as the Commissioner of the General Land Office shall prescribe; and where such grasshop-

pers shall reappear in eighteen hundred and seventy-eight, to the like destruction or injury of crops, the right to leave and be absent as aforesaid shall continue to October first, eighteen hundred and seventy-nine; and during such absence no adverse rights shall attach to said lands, such settlers being allowed to resume and perfect their settlement as though no such absence had occurred.

SEC. 2. That the time for making final proof and payment by preëmptors whose crops have been destroyed or injured as aforesaid is hereby extended for one year after the expiration of the term of absence provided for in the first section of this act; and all the rights and privileges extended by this act to homestead and preëmption settlers shall apply to and include the settlers under an act entitled "An act to encourage the growth of timber on western prairies," approved March third, eighteen hundred and seventy-three, and the acts amendatory thereof.

Approved March 3, 1877.

OBITUARY.

GEORGE WIER was born on the 23d day of May, 1819, in Waldo county, in the State of Maine, where he resided until his twenty-second year; then moving to Marshall county, State of Illinois, in which State he resided for twenty-six years. In November, 1867, he emigrated to Bourbon county, Kansas, settling in Marion township, in which he died, October 27th, 1878.

Mr. Wier was educated for a professional career—the law; but his fine sense of honor, love of truth, and strict integrity, revolted at the subtleties and evasions sometimes considered necessary by the majority of the profession, and he chose for a livelihood the occupation of an agriculturist and horticulturist, in which calling he was successfully engaged until his death.

Early after his settlement in Kansas, he became convinced that the railroad lands held out of market by the Government because claimed by the several railroads, or at least those in his neighborhood, were unjustly held from settlement, and brought the pioneer test case to a successful termination, thereby opening up to homestead settlement and cultivation some three hundred quarter-sections of land, in the western part of Bourbon and eastern part of Allen counties, in this State.

He was a man of keen perceptions, sound judgment, and strict integrity, thereby acquiring an influence among his neighbors never before held to so great an extent. He was looked to for advice, and his opinion taken in all business transactions. As a farmer, he was considered the model for the community. Two of his characteristics were, the love of order—a place for everything and everything in its place—and the well-doing of all work.

He was a member of the Presbyterian church, of Lacon, Illinois, while in that State, and until his death loved and cherished the doctrines of his church. During his residence in Kansas he lived remote from any church organization some twenty-five miles. He was very orthodox in his religious views, and waged an uncompromising hostility against vice and immorality.

On Sunday, the 27th day of October, 1878, after an illness of some ten days, he passed over the river of death, and commenced the day of eternal life, for which his actions while here had so eminently fitted him, leaving a wife and an only son, who, together with his neighbors, mourn a loving husband, a careful father, and an honest friend.

His remains very appropriately lie buried on the home farm on which he spent the last twelve years, and which will be a living memento of him who brought it to its present beautiful condition.

UNIONTOWN, KAS., May 1, 1879.

PROCEEDINGS
OF THE
EIGHTH SEMI-ANNUAL MEETING,
HELD AT GARNETT, KANSAS,
Wednesday and Thursday, June 19-20, 1878.

[NOTE.—The Society will not be responsible for individual opinions.—*Secretary.*]

The Society assembled in Stouch's Hall, on Wednesday, at 10 o'clock A. M., June 19th, and was called to order by the President, Prof. E. Gale.

Exercises opened with prayer by Rev. D. P. Mitchell, of Emporia, followed with music by the choir of the city.

The President appointed the following committees:

On Arrangements for the Sessions—A. A. Adams, E. S. Hunt, of Garnett; Dr. J. M. DeBall, of Fontana.

On Membership—M. A. Page, D. W. Houston and S. Buchanan, of Garnett.

On Final Resolutions—H. P. Welsh, of Ottawa; L. A. Walker, of Independence; D. G. Watt, of Lawrence.

REPORT OF COMMITTEE ON ARRANGEMENTS.

Morning sessions to open at 9 o'clock and close at 12 o'clock; afternoon sessions to open at 2 o'clock and close at 5 o'clock; evening sessions to open at 7½ o'clock and close at 10 o'clock.

Subjects for consideration during the first day: Morning session, "Small Fruits and their Management;" afternoon session, reports of the general prospects for a crop of fruit in the State.

DISCUSSION ON SMALL FRUITS.

DR. J. M. DEBALL: In the border-tier counties the crop of strawberries has been quite satisfactory. Wilson's Albany leads, for shipping purposes. French's Seedling has passed safely through grasshopper raids and drouths, and is very productive in Cherokee county. Kittatinny blackberry is a success in those counties; Snyder is rather uncertain. Miami raspberry is

successful, and leads in the list so far tried. I would plant strawberry in the spring, and use none but strong, healthy yearlings. It is cheaper and safer to plant home-grown stock than to order from a distance.

C. T. CHAPIN, Montgomery county: I have been successful with small fruits, excepting currants. Am testing planting currants on the north side of a stone wall, and this season the bushes are very healthy and promising. Of strawberries, the *Triomphe de Gand* and *Wilson's* are to be preferred. The last variety succeeds with even common culture.

M. A. PAGE: I have found the practice of heading-in of the canes of raspberries and blackberries as soon as they attain a growth of three or four feet, and thereafter clip the lateral growth to within one foot of its cane, is followed with the most profitable results in fruit the following year. Strawberries should be mulched during the hot weather in August, and for fruit the runners should be cut off as fast as formed. I have grown good crops three years in succession, by mulching the plants with stable litter, from the same planting. The land was deeply plowed and finely prepared before planting. Currants succeed on the north side of a fence, but in open places they cast their foliage before the buds mature, and thus become weakened.

W. R. STOUCH, Garnett: I believe that strawberries can be planted at any time and succeed, if carefully handled, and protected for a short time afterwards from the sun and winds.

G. C. BRACKETT, Lawrence: It is far better to transplant strawberries either early in the spring while the plants are in a dormant state, or in the month of September after the heat of summer has become tempered by cool nights and an occasional fall of rain. I prefer spring-time, and as early as the ground can be properly prepared, as then the plants will become well set in the ground, and start off vigorously with the first warm days and become well established to endure the liable drouth during August. Some advocate transplanting immediately following the fruiting period, which in my opinion, from years of experience, is the most critical season in which to move plants, for the following reasons: First, all the vital forces have been directed during the previous season to the production of a fruitful condition for the following season, and all the strength of the plant has been concentrated in the prime office of its existence, viz., the maturing of its fruit. After that is accomplished the plants are left in a prostrate condition; their vital forces are reduced to the minimum, and the plants are barely able to sustain life under most favorable conditions: many do succumb to this prostration, and die while in such a condition. It is proposed to add to its burdens the unnatural process of transplanting, which process unavoidably, to some extent at least, cripples it in its natural efforts to rally, by the loss of many of its sources of supply—the roots. Furthermore, if you will examine the roots at this time, they will be found in no active condition, but simply performing the office of sustaining the plant until new ones are developed, which take the place of the old ones and the old ones soon die. It is not desirable

to use plants which have borne fruit, in the formation of new beds. Yearling plants, or those made by the parent the summer before the spring they are to be transplanted, contain all the necessary vitality to withstand the moving, and by picking off all fruit stalks as they appear, will develop into fine stools having many crowns, from each one of which starts up a fruit stalk the spring following. And bear in mind that in proportion to the size of the stool is the number of the crowns, which determines the quality and quantity of fruit you can reasonably expect from each plant.

D. P. MITCHELL, Emporia: I have lived in Kansas fifteen years, and find our soil and climate well adapted to fruit culture. Many of our farmers do not give it much attention, from a lack of proper knowledge. They are home-seekers, and know how to grow corn and raise hogs, &c., and expect some day to become rich—and then they will employ some one who is posted, to grow their fruit. It has appeared to me that a knowledge of proper methods for the growth of fruits, vegetables, and even flowers, could and should be taught in our common schools. Employ men and women teachers who are competent to impart such information to the children, and they will soon acquire a love for such things and become teachers of such parents. In this manner a reform would be effected, followed with happy results.

DR. J. M. DEBALL: Elect men to our Legislature who favor such a course of teaching in our common schools, and it will very soon be introduced and the desired end reached.

C. BOZANSON, Garnett: I can fully indorse the remarks of Mr. Mitchell. Make the farm attractive, and the children will love to live there. I love to garden, and love to teach botany, &c., and to stimulate the minds of the young to grasp ideas that will prove of a practical advantage to them in after years.

M. A. PAGE: As County Superintendent of Public Instruction, I have urged our teachers to teach our children these things by object illustrations. Place plants before them to illustrate principles in botany; what plants are made of, and how constructed; explain the various organs in their structure, and the functions of these organs; surround the school house with trees, ornament the grounds with flowers and grasses, and the pupils will soon love the associations with such objects, and thirst for a knowledge of their culture.

Adjourned.

WEDNESDAY AFTERNOON.

R. MILLIKEN (Vice President, Emporia) called the meeting to order, and announced that the ill-health of the President would prevent his attendance during the afternoon session.

The subject set for the session, viz., "Reports of the General Fruit Prospects for 1878," was announced.

H. E. VAN DEMAN, Geneva, Allen county: Prospects are good for all classes of fruits, except apples, which will be about one-half a crop. Apples—Varieties bearing the heaviest are in the following order: Ben Davis, Winesap, Missouri Pippin, Summer Rose, Red Astrachan, Carolina Red June, and Early Harvest. Peaches—An immense crop. The first sound, ripe fruit was on the 13th of June. Alexander, five days in advance of the Amsden. Blackberries—Promise a good crop. The Kittatinny leads; Crystal White, fair. Gooseberries—Good crop. Currants—Doing better than in other years. Growth of trees satisfactory; no cause for discouragement in our present prospects.

L. A. WALKER, Montgomery county: I have every reason to believe that the extreme southern counties will prove well adapted to fruit-growing. A few of the varieties of apples among the early plantings, I am satisfied, are not the varieties which will succeed the best. Peaches are equal in prospect to those of last year. We had, in 1877, 136,000 trees, and in 1878, 204,000. Small fruits have been abundant, and varieties ripening after this promise a good crop. Cannot tell the result of grape crop, as there is time yet for its ruin by rot.

H. P. WELSH, Franklin county: Strawberries yielded a heavy crop; raspberries and blackberries promise a heavy yield. Apples—The Ben Davis and Willowtwig are most promising; Missouri Pippin bloomed profusely, but cast much of its fruit. On trees of summer varieties the fruit is scattering. The crop will be about one-fourth of that of 1877.

DR. J. M. DEBALL, Miami county: Small fruits have been giving and promise an abundant yield. Apples—Many varieties have cast most of their product. Ben Davis leads, and is carrying its fruit well. The fruitmen in the eastern counties are very much encouraged, and are preparing to enlarge their orchards during the coming spring.

S. S. TIPTON, Mineral Point, Anderson county: My apple orchard was planted eighteen years ago. This season the Yellow Bellflower trees are overloaded with fruit; Ortleigh light, and the Willow Twig is a failure; Hutchinson Pippin (supposed to be the Kansas Keeper) is the most constant bearer and profitable apple in my orchard—does not blight as in other localities. The same conditions prevail in Coffey county. Pears that have failed to fruit heretofore are carrying an abundant crop this season, and those productive heretofore are not this season. The Bartlett fails this year.

G. Y. JOHNSON, Lawrence, Douglas county: The year of 1877 was a very fruitful one for our county. Apples—The trees bloomed profusely this year, and cast their fruit prematurely, as many of us predicted. Fruit is scattering in all varieties, except the Ben Davis and Maiden's Blush, which are carrying a fair crop. Pears have suffered from the attacks of blight in the city of Lawrence. Plum trees are fruiting. Smudging the fruit with coal-tar smoke has been successfully used as a prevention to the attacks of the curculio.

J. Q. MERRIAM, Fort Scott, Bourbon county: I have five hundred Ben Davis apple trees, which are a success. Peaches—Both early and late varieties are promising a good yield. Pears—Flemish Beauty and Bartlett succeed; also the Louise bon de Jersey, as a dwarf. Plums—Lombard, and a variety of the Gage planted in a range for chickens as a protection against attacks of the curculio, succeed. Have had constant crops from the Wild Goose variety during the past five years, which suffered but very little from insects. Apricots—Succeed in many places. Cherries—Early Richmond and English Morello succeed, and some of the Heart varieties yield a fair crop. Blackberries—The Kittatinny will yield heavily, while the Lawton is worthless. Gooseberries are abundant, and the raspberries (cap varieties) are a success. The Turner and Philadelphia partially succeed. Strawberries receiving special care are a success. Should be planted in rows four feet apart, and plants one foot apart in the rows; cultivate in spring as for corn, mulch lightly in the fall, and again cultivate early the next spring, and mulch the entire ground between the rows, to keep weeds subdued.

ROBERT MILLIKEN, Emporia, Lyon county: The apple crop will be light; small fruits, excellent crop. Blackberries—Kittatinny is heavily loaded, and is the variety generally planted. Crystal White is fruiting quite well this season, though not during other years.

J. L. WILLIAMS, Oswego, Labette county: Strawberry crop has been large; flavor has not been as good as in other years, probably owing to excessive rains. The variety Col. Cheney, in one locality, has surpassed all others. Chas. Downing I consider the most desirable. Kentucky is a good variety for late fruit. Raspberries—Doolittle for early, and McCormick (or Mammoth Cluster, as some have it) for late, have proven to be the most desirable. The Turner is very promising. Blackberries—Kittatinny now ripening in our county, and the Lawton, which continues the season for this fruit about two weeks, is carrying a good crop. We have two varieties of white blackberries; one is a round berry and has a sour flavor, the other a long berry and sweet. Currants, where planted in the shade of a trellis, and having good ventilation, are doing finely. Cherries—Dukes and Morello have fruited well; Heart varieties not so well. Plums are only a partial success. Miner and Chicksaw varieties are quite satisfactory. I have forty trees of the Wild Goose variety, which are heavily loaded, but are rotting and dropping very rapidly. Peaches are an abundant crop; Amsden has rotted badly,

Alexander rotted some, Hale's Early commencing to rot. Apples—Some varieties are doing well; scab injures the Carolina Red June. Apricots—Breda the most satisfactory; Moorpark trees are quite tender. Grapes will be half a crop, being thinned by rot.

M. A. PAGE, Anderson county: Apples—In orchards on low lands, the Early Harvest and Red Astrachan trees are well loaded; on high lands, the late varieties and some few of the autumn varieties are fruiting. The Ben Davis generally is productive this season. Small fruits have yielded heavily, and later-ripening classes promise fine crops. Grapes, in all localities and under the various systems of management, are abundant. Insects—Rose-chaffer have done some injury; tarnish plant bug and leaf-rollers are present in this county.

D. W. HOUSTON, Anderson county: Apples—My orchard of four thousand trees, planted twelve years ago, with the exception of a few trees sun-scalded in 1874 is healthy and vigorous; bloomed profusely the past spring, but will not mature more than one-eighth of a crop. Maiden's Blush and Golden Sweet are full of fruit; Jonathan produced a full crop in 1877, and is carrying a fair crop this year. I consider it the finest variety in my orchard. Have 1,000 trees of Missouri Pippin; are not satisfactory—not productive, and fruit is inferior. Rawles Genet trees are tender; the Lowell trees have a fair crop; Smith's Cider very full crop. Grapes—My vines are dying; varieties are Concord and Dracut Amber. My location is high land; soil, deep black loam.

COMMITTEE.

On motion of J. L. Williams, the following committee, by request of Mr. Houston, was appointed to visit his fruit grounds and those of Mr. Buchanan, and report to the Society the results of an examination during the sessions: J. L. Williams, Dr. J. M. DeBall, and S. S. Tipton.

REPORTS ON PEACHES.

JOSHUA TAYLOR, Garnett: I ordered from Illinois Alexander peach buds. The trees from those buds are hardy and vigorous, and produce fruit when only one year old. One of the trees is now full of fruit on the northeast side only. The fruit is a pretty clingstone, and in 1877 ripened July 10th.

E. J. NUGENT, Ottawa, Franklin county: I have produced three varieties of seedling peaches from a promiscuous lot of pits thrown upon an unbroken sod, and they have had no cultivation. Here are specimens of the fruit. [See report of committee on new seedling peaches, on pp. 32, 33, for a description.—SEC'Y.] The trees were heavily mulched in early spring with stable litter, to retard early development, and that caused them to ripen a couple of weeks later, probably, than would have been the case if left open, as other varieties were.

DR. J. M. DEBALL: I rise to say, that if such fine fruit as Mr. Nugent has exhibited can be grown on sod, and without culture, will it not reverse the teachings of the fathers?

E. J. NUGENT: I do not desire to be understood as attempting to reverse the systems of culture advocated by this Society. The trees bearing this fruit grew in a hen-yard, where the soil has never been stirred by plow or any other implement. Of course, the soil is fertilized by the mulching thrown around the trees, and not by cultivation in the general sense.

J. L. WILLIAMS: Amsden's June ripened this year in my county June 10th. I have concluded to propagate this variety no further. It is worthless, lacking in flavor.

L. A. WALKER: Amsden's June ripened at my place June 2d.

COMMITTEE ON NEW SEEDLING PEACHES.

On motion, the President appointed the following committee to examine and report on the specimens of new seedling peaches placed on the tables for exhibition: H. P. Welsh, Ottawa; J. M. DeBall, Fontana; G. C. Brackett, Lawrence; L. M. Ernest, Garnett; J. Q. Merriam, Fort Scott.

COMMITTEE ON FLOWERS EXHIBITED.

Mrs. L. Everett, Garnett; Mrs. D. W. Houston, Garnett; Mrs. L. H. Gordon, Garnett; Mr. J. L. Williams, Oswego; Mr. H. E. Van Deman, Geneva.

The Committee on Arrangements announced the exercises for the evening session to be:

Music; Address of Welcome, by Dr. Delos Walker, of Greeley; Music; Response by Dr. J. M. DeBall, of Fontana; Music; President's Semi-Annual Address.

Adjourned.

WEDNESDAY EVENING.

Owing to the continued illness of the President, the meeting was called to order by Vice-President R. Milliken, and exercises were opened with music.

An address of welcome was made by Dr. Delos Walker, of Greeley, which was responded to by Dr. DeBall:

RESPONSE TO ADDRESS OF WELCOME,

BY DR. J. M. DEBALL, OF FONTANA.

Ladies and Gentlemen of Garnett: In behalf of the Kansas State Horticultural Society, I thank you for the kindly words of welcome so fitly spoken by the gentleman who has just addressed us. As a rule, horticulturists are not talking, but *thinking* and *observing* men. But, let me assure you, we all *feel* and appreciate your cheerful welcome.

At your invitation, we come from all parts of our beautiful State to confer with you on the one great subject which for the time demands our consideration. We come, not as candidates asking your suffrages; not as advocates of any particular sect or clique, either in religion or politics; not as disciples

of any particular views in regard to currency, whether of paper or metal, or a mixture of both—whatever opinions we may hold on any or all these subjects as individuals, none of them enter into our present mission. We come to you to assist you, as far as may be, with our experiences in horticulture, and to receive such assistance as we may from your acquirements in its varied kindred branches of natural science.

Our friend who has just addressed us has given us a rich treat in his pictures of oriental splendor, and shown his fine taste in classical research, as well as his oratorical skill in presenting his subject. He has our special thanks for the mental feast he has spread before us. We have read of these things, and in our semi-waking dreams have wandered through those labyrinths, instinct with life and glorious in beauty; but we have only read and dreamed, and then awoke to the work-day experiences that have been opened up to us. We do not wish it understood that we have not some of us vivid imaginations of the beautiful. Esthetic in our habits and thoughts of what we wish and what we desire, but, “alas and alackaday!” the dread realities of the present and the annoying drawbacks to the profession to which we have devoted ourselves, continually bring us back to earth and its concerns.

We come to you as strangers. You meet us with open hands and warm hearts. We have been shown your teeming orchards, flower lawns and fruitful gardens. You have set before us the “fat of the land.” Nor is this all: the floral arrangement of this spacious hall tells us that woman has given her tribute to our welcome. The silver band on the balcony shows to us a place in the popular heart; and last but not least, the splendid choir, composed of the *élite* of your beautiful city, has rendered us many and choice selections of music. The warm grasp of manhood’s honest hand; the presence of woman’s beaming smile; the soft breathings of delicious music! This is indeed a welcome worthy of the cause to which we to-day devote ourselves.

But—I had almost forgotten myself—we are here to-day to ask your co-operation. Agriculture gives wealth to a State; horticulture, while assisting in this direction, also gives beauty and health. We ask you to assist us in our work. Our State combines more *natural* advantages than we can enumerate here. Let us develop the latent powers of nature in our soil until our verdant prairies shall literally “blossom as the rose.” Of course there are drawbacks. Where are they not? Let us study to overcome these—learn to accommodate ourselves to the peculiarities of our climate and soil, until we can utilize the advantages we have, and avoid as far as may be the difficulties we cannot conquer. Let us plant trees, even if the next generation gathers the fruit. If the soil is unfavorable, let us correct the soil until we shall succeed. Where trees are not practicable, let us plant shrubs; and through all and above all and over all, let us plant flowers (where is there a place in Kansas that flowers will not grow?) until our beloved State shall in some degree call to mind the *eidolon* of the poet’s fancy:

"There's a beautiful river in a distant isle
Where the sunbeams quiver in silvery smile,
Where the flowers that bloom in the autumn sky
Grow gem-like all, and never die."

"So mote it be."

Again, for myself and the Society, I thank you.

Music.

The President's semi-annual address was deferred, for reasons given at the opening of the meeting.

Adjourned.

THURSDAY MORNING.

The Society assembled at the appointed hour; President Gale in the chair.

Exercises opened with prayer by Rev. A. T. Burris, of Garnett; which was followed with music by the city choir.

COMMITTEE ON LUNBECK'S PATENT COMPOUND.

On motion, the President appointed the following persons a committee to investigate J. B. Lunbeck's "Patent Compound," being sold as an insect exterminator and tree invigorator: H. E. Van Deman, Geo. Y. Johnson, L. A. Walker.

The Committee on Arrangements reported the following exercises for the day:

Morning Session.—Kitchen-garden culture, forest-tree culture, and fruit-tree culture, including preferable soils and locations.

Afternoon Session.—Miscellaneous papers, and discussions, relating to horticulture.

Evening Session.—Time to be devoted to essays and discussions relating to floriculture, and closing miscellaneous business.

DISCUSSION ON KITCHEN-GARDEN CULTURE.

H. E. VAN DEMAN: A good vegetable garden is an important item in the consideration of the comfort and health of one's family; and the selection of our richest soils, for most varieties of vegetables, is a necessity, to secure satisfactory results. To make gardening easy and profitable, everything designed for cultivation should be planted in long rows, of convenient distance apart to allow the free use of a cultivator drawn by a horse. This method dispenses with the slow and tedious process of hoeing, which so many dislike, and renders a better cultivation.

E. J. NUGENT: I like the plan suggested by Mr. Van Deman; it is easy, economical, and, if well carried out, must be successful.

DR. J. M. DEBALL: I have found that one half-pound of nitre, dissolved

in one half-barrel of water, forms an excellent compound to destroy the little striped bug found on our vines. As this little pest goes into the ground at the approach of night, administer in doses of one pint of the preparation to each hill, and it cleans them out. Some plant radishes among their vines. This bug will leave the vines to eat the radishes. I regret to see so many of our city people attempting to grow fruit on their small lots, and depend upon the markets for their vegetables, when it would be better to grow vegetables for their tables, and depend upon the markets for their fruit. More attention should be given to that health-giving vegetable, asparagus. Most any deeply-plowed and highly-enriched soil will produce fine stalks. Use salt (broadcast on the land) freely; a pound to every square rod is not too much.

R. MILLIKEN: Prof. Riley says the squash bug seeks shelter during the night under rubbish near the hills, and recommends placing pieces of boards near the vines, under which they can crawl. This will afford an easy means of destroying them by crushing.

PROF. M. L. WARD, Manhattan: There are three divisions in this pursuit, viz.: field, market, and home gardening; and all three really have the same end to reach—the production of a fine article. Any labor-saving method in culture is certainly desirable. The gardening among our farmers generally falls on the women. What a pitiful sight is a woman, in a calico dress and limp sun-bonnet, on a windy day, weeding an onion-bed; and yet such, or a similar one, is often seen. It is that, or no garden, with many families. Town-people depend upon the country for their vegetables. That is wrong. Every owner, or even renter, of a lot, should manage to place upon his table each day these articles, fresh from his own grounds.

Asparagus.—The deep trenches we see so often recommended for the growth of this excellent food are unnecessary. Any well-enriched and deeply-plowed soil is all that it needs.

L. A. WALKER: A garden for home purposes should be handy to the kitchen, and not, as often is the case, away off in the field.

H. P. WELSH: Plants for vegetable gardens should be started early, and some varieties will pay to plant the seeds in protected places, where the sun's heat concentrates, or even indoors. Tomatoes should be grown on trellis, or at least some kind of supports, to keep the fruit off the ground. Cabbages should be well manured. Hen-droppings are an excellent material to dress the surface of land, after the plants are set, and sprinkling the plants with liquid hen-manure will protect from ravages of the flea. Peas should be planted four inches deep, in rows three feet apart, and supported by a two-wire trellis.

H. E. VAN DEMAN: Persons in pulling the stems of pie-plant should remember that the plants become weak and sickly by too often and heavy pullings.

Adjourned.

THURSDAY AFTERNOON.

President Gale in the chair, who delivered his semi-annual address, as follows:

PRESIDENT'S SEMI-ANNUAL ADDRESS.

Ladies and Gentlemen of the State Horticultural Society, and Citizens of Garnett: No pursuit is more absorbing than that of horticulture. The more carefully we attend to the laws that underlie the pursuit, the more shall we find to delight us. This arises more (probably) from the fact that we are always learners, than from anything else. For however thoroughly we may pursue any branch of horticulture, we shall be compelled to confess that there are vast fields which we have neither the time nor the ability to explore. We shall find that the great prerequisite for success here is thoroughness of culture, both of the soil and of the mind. The culture of the latter, indeed, is as essential as the first. It may be laid down as a settled principle, that the highest order of success can never be attained without the thorough culture of the mind. This culture will embrace a far wider range of study than may be at first apparent. If we take, for example, that important and natural outgrowth of all horticultural work, namely, landscape gardening, we shall find that there is scarcely a branch of science that can be left out of the course if we would attain the highest order of success in this direction. We can all see that the relation of botany and practical horticulture to landscape gardening is of the most intimate character. We must know not only what the habits of trees, shrubs and flowers are, but we must know how to handle them. We shall also find ourselves brought daily face to face with facts involving an intimate acquaintance with civil engineering. If we are wanting here, we shall be constantly liable to fatal blunders. We shall find, also, that physics, meteorology, zoölogy, especially in the departments of ornithology and entomology, and drawing, demand our special attention. It is also of indispensable moment that we become thorough masters of the line, as nature's simple and essential element of expression. We have not only to study the line as seen in nature and under the hand of art to-day, but to hold steadily in view that line as it is to be in the distant years of the future. He is to study the lights and shadows of his work as they must appear when the planner himself has gone to his rest. Taken in its immediate and ultimate bearings, there can scarcely be a grander work than this, for it takes into consideration the highest interests of those who are to come after us.

Through a great misapprehension, the practice of landscape gardening as an art has been looked upon as of very little practical importance to the great mass of men. For this state of things we believe the landscape gardener is himself at fault. If we examine any of the works which have hitherto been published on this subject, we shall find that they have (in a

measure, at least) failed to bring their work down to the wants and conditions of the people. We shall find that they have held steadily in view a class of ornamentation which the mass of the people can never reach. But if we take a correct view of this art, we shall find that its essential principles are of practical and every-day application to the interests of men. In other words, it is not a mere fancy art which the mass can reject without loss, but its essential principles lie at the basis of successful rural life, and the interests of the farmer are here most deeply involved. In this address I propose to leave all outside questions, and simply consider this subject from the standpoint of practical life. In doing this, I remark that there is a department of landscape gardening which belongs to the farm. It perhaps matters little what name we give to this kind of ornamentation which comes within the reach of every farmer, but I can find nothing that suits my purpose better than Farm Architecture, and by this we mean the laying out of the farm with reference to those essentials—*comfort, convenience, health and beauty*.

The first thing to be done in the laying out of a farm is to get the farm; and at this point we should note that it is a very fine thing that you and I and the rest of mankind generally do not see through the same eyes. Happily, we do not all want just the same farm. You, with a more refined taste than myself, may find beauty where my coarser nature may fail to discover it. As in our youth we saw lovely features and lovable traits in certain dear ones who are kindly bearing the burdens of life's cares with us, and growing dearer through the mutual trials and varied experiences of years, bearing the marks of age, it is true, but also of maturity in high and generous and self-forgetting purposes, so we find attractions and learn to love locations as varied as nature can furnish, and which become dearer and dearer as the years go on. But when a home is once selected, we are brought at once to a few important and practical questions. Our purpose should be to make that place, wherever it may be located, either through taste or necessity, as available for all the purposes of a home as the means at our command will permit.

The farm must be viewed from two standpoints. From the one side we see it as a home, simply, where the husband and wife are to enjoy the varied experiences of life together, where the children are to grow up to manhood and womanhood, with purposes and tastes shaped and defined by the daily nurture of that home, and where the father and mother are to ripen with the accumulating experiences and burdens of age, and it may be some of their loved ones, also, for the enjoyment of that purer and brighter garden beyond the flood. From the other side we see it as a machine, designed to work out certain purposes. The productions of this complicated machine are wonderfully varied, having almost no limit, only as found in the intellectual power of the farmer, who holds under tribute all the elements of nature. Now we find this machine producing vast quantities of grain. Again, we find it

concentrating all its energies in the production of pork and beef, butter, cheese, and the varied products of the garden and orchard.

These two ideas of farm life are in a certain sense inseparable. Thus the farmer and his family, in their very existence, become incorporated with the machine or instrumentality through which they all attain their support. The very business of life is made part of the home, and cannot ordinarily, in the nature of the case, be separated from it. The merchant carries his business to his store, the mechanic to his shop, the lawyer or physician to his office, and each returns at the end of a day's work to a home from which the business of life is in a measure shut out. The family are excluded from the prevailing and often demoralizing influences of the store, the shop, or the office. But with the farmer all this is changed. He takes his family into the very midst of his business, and the whole household become almost a part of that producing machine—the farm. The farmer and his family are the impelling power by which the elements of nature are made to yield desired returns. The family cannot be separated from the farm, either in purpose or in person. They cannot retire, like people of other employments, when the business of the day is done, to other surroundings. They work, they think, eat and drink and sleep, in the vehicle that carries them on life's course. The first thing in the morning and the last at night is the farm, with respect to some of its duties or demands. While this is true, it is quite possible to make the farm a mere producing machine, or to combine with it that all-important conception, a HOME. We know what it is, some of us, to move slowly on towards the setting sun, in the emigrant wagon. That piece of mechanism, the old wagon, carried all our home for a time. We clung to it as our all. There we ate, drank and slept. While we thus lived in the wagon, the higher conception of a home found no place in our minds. Virtually, thousands of farmers never get their families out of the wagon. In other words, they see the farm only as the rude machine which is to accomplish certain purposes. They never get their ideas out of the emigrant wagon, and the children, barefooted and bareheaded, only serve to bring up the rear with the cows and the pigs. This may seem to be over-drawn, but there are not wanting places even in Kansas (though we are glad to believe they are few), where the pigs are excluded from the kitchen only by the board which keeps the children in; and we are inclined to believe if it were not for the necessity of keeping the baby in, no board would have shut the pigs out.

Let it be understood that we are very far from deprecating that policy which would make the farm in the highest sense a successful and profitable producing machine. But this does not ignore the idea that the farm is also to be the home of the family, and should be fitted to cultivate the tastes and elevate the purposes of the household. With these two objects clearly before our minds, the importance of farm architecture will be far more fully appreciated. On the one side we are not to regard the farm as a mere ma-

chine, and on the other we are not to conceive of it as mere ornamental grounds. Securing if we can the golden mean, we must seek to make the farmer's home both an instrument of profit and a place of beauty.

It will be out of the question for us to lay down any rules which can be implicitly followed to effect this end; for as one place differs from another in natural outline, so must the artificial arrangement of places differ.

One point of difference will arise from the diversity of objects to be attained. We shall of course select a farm with reference to the kind of farming to which we are to give special attention. If we are to engage in the production of cheese and butter, we shall have this in view while selecting our locality. But more than this, when our place is once selected we shall lay out the farm with special reference to this object. Had we time, we should find by careful comparison that the object to be attained will give special direction to farm plans.

But the first essential in the plan of the farm, both with respect to *profit* and *beauty*, is

CONVENIENCE.

We all do a vast amount of unnecessary work. This shows itself as often in the arrangement of the farm as anywhere. Inconvenient plans are always in the end costly plans. This point generally receives too little consideration, and as a result we are continually wasting a vast amount of labor and time. Too often we have no regard to time in the locating of dwellings, barns, stables, wells, yards, cribs and lots; and as a consequence, we have daily to spend no inconsiderable amount of time in unnecessary work. If this loss amounts to only five minutes a day, that will be three days' labor in the course of the year. After looking over some farms, I am inclined to believe the average loss from inconvenient plans cannot be less than an hour per day, and that will amount to the work of a man forty-five days each year. It is not improbable that from want of convenient disposition of farm appliances far more time than even one hour per day is virtually thrown away on many farms of average size; and doubtless in many cases the success or failure of the farmer's life depends upon the convenience or inconvenience of his farm.

It is useless to expect that true beauty can be attained where there is this glaring want of convenience in the general arrangement. In whatever direction we turn, there are the evidences of discomfort. There may be a beautiful spring of water, but the chances are nine in ten that the farm buildings will be placed at an inconvenient distance from it. If a well is dug, it is more likely than not to be at an awkward distance from the kitchen. Have you a horse to care for, you must lead or ride him forty rods, or a half-mile it may be, for water, and you must go away to the right a long distance for hay, and away to the left an equal or greater distance for corn, and the same with all the stock of the farm; and by the time one is through with the "chores" on a cold winter morning, he is constrained to cry, "Blessed be

nothing!" As the result of all this, there must be a feeling of discontent pervading the home circle, and a final desertion of the farm by its younger members.

Much of this inconvenience and consequent discontent can generally be avoided by a little careful consideration in the beginning, and in the real comfort and convenience of the home will be found the first essential for subsequent ornamentation. We all accept the old adage, that "handsome is that handsome does;" so there is a beauty in simple *convenience*. We cannot fail to recognize it in the happy adjustment of each portion of the farm home to every other part. This wise adjustment gives time, and prepares the way for an advance step; for we shall always find it an easy and natural step from convenience and comfort to beauty.

We are to recognize at all times the fact that there is much proposed by the landscape gardener that does not come within the province of the farm. Intricate plans and costly expenditures, broad lawns, winding and nicely-kept drives and walks, do not enter into our consideration to-night; but the farmer will and must to a certain extent plant trees, and usually it is just as easy to place these where they will add to the comfort and beauty of the home as otherwise.

WHERE TO PLANT.

The location of the single trees, clumps, shelter-belts, forests and orchards should not be left to accident or to a mere transient whim, but should be decided by the fixed rules of comfort, or convenience, and landscape effect. When planning for the location of clumps, shelter-belts, and even single trees, there are several questions to be considered, the following of which are perhaps the most important, as: If I locate my plantation in a certain way, how will this plan affect the prevailing winds? Shall I favor the creation of wind currents to the injury of farm crops? Shall I secure by this planting the greatest comfort to my family and stock? Looking into the future, what will be the artistic effect? I am forced to add, what will be the effect of my planting upon the health of my family, and also upon garden and orchard? Now, if we take into consideration the location of farm buildings, the division of the farm into lots, the laying-out of farm roads, the planting of clumps of trees, forests, orchards, gardens, and the disposing of single trees, all with reference to the unalterable laws of convenience, and at the same time with a reference to artistic effect, we cannot fail to see that the farmer has presented to him one of the most difficult and complicated problems. And looking over the work already done, we have to wonder that so much has been attained, rather than to complain of so many manifest failures. The real difficulty of the problem is greatly increased by the fact that our work is to be laid out under the direction of general principles, rather than fixed rules. Every farm has its peculiar features, and these must be recognized in the plan. Every location must receive its peculiar treatment, and in some measure be dealt with as an independent problem, and one that

really demands more thought than any other in the whole life of the farmer; for in view of its immediate and ultimate effects, there is really more involved in the settlement of the question here considered than in any other that can ever engage the farmer's attention. The success and happiness of himself and family are to a large degree involved in the question; yet when we come to examine the real condition of things among the mass of farmers, we find that little attention is given to this subject. Every man, whether he is familiar with farm life or not, apparently feels himself fully competent to lay out his farm, or, rather, seems to consider it a matter of no special moment. He resolves to place his house here, his barn there, and his pig-sty yonder, because accident seems to so shape. To hide the offensive, to bring into view the attractive, to give appropriate settings to gems of landscape, and to shape the plantings of to-day with reference to graceful lines in the distant future, are unfortunately questions seldom thought of. For want of this consideration, much of our work is a source of positive discomfort; hence, much of our labor must be destroyed, and often years of growth wasted for want of proper consideration.

The first thing, then, for the farmer to secure, is a carefully-digested *PLAN*. This will not come up to us ready made, like some dream of the night, but it will require time and study. Every point involved should be thoroughly considered. We will assume that the question of *convenience* has received its proper attention. Now we come to what may be regarded as the ornamental work. I shall not argue the importance or usefulness of this part of the work, though its large cash value can be easily demonstrated. We shall assume that farmers desire to make their homes a delight to themselves and to others. The ornamentation of the farm should, from the first, recognize the essential laws of beauty. On every farm there are more or less pleasing landscape views. The new plantations should be made to heighten rather than to destroy these. There are always more or less objects that are either offensive or negative in their character. These can be hidden or so obscured as to change their characteristic appearance. The prevailing winds will come in, also, for consideration in our planting. We shall find it a matter of interest to study the general effect of our entire plantation upon surrounding scenery. How will our plantations combine with the plantations of other farms already made or likely to be made? We shall also be compelled to consider how far it is wise to plant thickly, with reference to ultimate removal. It will not do for us to dispatch these considerations without thought. They will demand our time if our farms are to become attractive in future years.

It will be impossible in the brief space of an evening lecture to give definite rules which will apply to specific cases, but the *mode of procedure* in beginning our *plantations* can be *more profitably* considered. With reference to tree-planting, it is best in all cases, where possible, to commence at the beginning. That is, our plantations in this country, and especially where economy is a matter of moment, should be made with young trees. These

may be of our own raising, or purchased in large quantities, at wholesale, at such prices as will bring them within the reach of all. There is both a lack of economy and wisdom in expending considerable sums for large trees. They are expensive in first cost, in transportation, and in replanting; besides this, they are more likely to fail in the end.

There are essentially two plans which can be adopted. The first is by the planting of large trees, so as to produce immediate effects; and the other by the planting of seeds, cuttings and small trees, looking forward to the future for results. This latter course is the only one that the farmer can safely and successfully adopt. The first can be adopted only where the consideration of time is everything, and money nothing. Adopting the idea that we will plant cuttings, seeds, or even small trees, we shall find that every family owning a few rods of land even, can accomplish something. What is easier than to plow in a few bushels of black walnuts during the fall or some day in the winter, when the ground is not frozen? What job easier than to collect a few pounds of the ash or box-elder seed, which is so abundant on our river banks in the fall? Bury it in the sand, and plant it like corn, in the spring. Or plant the honey locust, the coffee-bean, or, rather than nothing, even the black locust. Or select a bundle of cuttings of the cottonwood, the silver poplar, or the willow, and, studying the effect of your planting upon the general landscape and upon the interests of the farm, put them in just where some of them at least can be allowed to remain.

I desire to make a special point upon the location of what may be termed the incipient or nursery planting. Our first object should be to put the seeds or young trees upon the ground to be occupied by the future plantation. This will obviate the necessity of removal of a large number of them, and at the same time secure a far more vigorous growth. A few simple rules should guide us in this work, and these rules are applicable to actual farm planting:

1. In the first plantings seek to put our plantations where they will secure the best effects, both for protection and ornamentation.
2. Avoid all costly exotics. Do not spend time and money in testing trees of doubtful hardiness.
3. Study carefully the linear effects of all your plantations with respect to your own place and also surrounding farms.
4. *Plant closely.*

For Kansas, I am thoroughly convinced that there is no rule more important than this last one. There are so many advantages growing out of close planting that under no circumstances should the farmer discard it. We find everywhere a constant desire to cover too much ground with our planting at first. Far better would it be for us to plant a small patch closely, and gradually enlarge our forest through a period of years, rather than to scatter our trees thinly over a large tract at first.

REASONS FOR CLOSE PLANTING.

The reasons for this are briefly —

1. That the trees need protection, and it can be secured in this way better than any other.
2. The trees will sooner take care of themselves. If planted thickly, they will need little culture after the second or third year at the longest.
3. We shall get more immediate returns from our planting, in the way of protection and in the thinnings of the forest.
4. We shall thereby secure a far more valuable class of timber, as the trees will grow higher and be in much better shape for economical uses.

WHAT VARIETIES OF TREES TO PLANT.

The varieties of trees which it is desirable to plant, I shall pass with the statement that it will be most prudent to depend mainly upon our native trees as being best suited to our climate. From time to time we shall find valuable exotics, but it will not be desirable for every farmer to enter upon a course of experimentation in regard to the desirableness of every new tree that enthusiastic tree dealers may desire us to try, only for the public good, at \$3 or \$5 apiece. New trees, new forage plants, new vegetables, new apples, new pears, new cherries and new small fruits should all be touched lightly. All I have to say, gentlemen, is, that when such things are offered, bite very carefully. The great trouble is, that most of us are too ready to take hold of everything new, especially if it is brought around in the hands of a plausible agent.

This point, however, should be carefully considered in the selection of our native trees, and that is, their natural form and the size of each variety. This matter becomes frequently as important as the arrangement of the general plan. Hence it is desirable that we direct our attention to the size which each tree and shrub will attain, and then carefully study the manner in which these trees and shrubs ought to be arranged so as to produce the best effect.

—Time and circumstances have permitted me to give you only the merest outline of a subject which I have been forced to regard as among the most important that can engage the farmer's attention in a new country, where everything is in the formative state. Our permanent improvements are just begun. It is for us to say, not only where we are to live and what our enjoyments of surrounding nature are to be, and what burdens we are to carry, but we are to say where coming generations are to live, and in a measure what their surroundings and tastes and burdens are to be. Involved in this question also of necessity is the future of our families; and while the question considered must be viewed from the standpoint of profit, it reaches infinitely higher. It takes hold of the higher nature of man; it proposes to surround him with a beauty in nature which shall awaken a responsive love in the very depths of his being, that, like the changeless love of woman, will never desert him, and however wayward his wanderings, bring him back to the farm and to home.

An essay, by L. A. Reese, of Chetopa, was read by Mr. C. T. Chapin, as follows :

A FEW VARIETIES OF WINTER APPLES ADAPTED TO KANSAS.

The list of winter apples profitable for culture in this State is a short one, and I speak in reference to my observations and experience. The Winesap, Missouri Pippin and Ben Davis are, in quality, materially deficient when compared with some of the choice varieties grown in other States, or even in our own State, with only partial success. Here I allude to the Rhode Island Greening, Westfield Seek-no-further, Roman Stem, and Northern Spy. These are generally a failure in Kansas, in some one of the valuable points of productiveness, keeping, or hardness of the tree. Of the three varieties generally successful, I place the Winesap at the head of the list. I claim for it early and profuse fruitfulness, a reasonably good cooker, and a first-rate keeper. As a dessert fruit it is fair. The main objections to this variety are, the size of fruit being rather small, and the stubborn tendency of its branches to shoot out across the head of the tree. These, however, may in a measure be controlled. The size can be increased by thinning the crop, and the development of the limbs by proper attention in pruning. This extra labor meets with its reward in the improved conditions as a result.

The second variety in our list (Missouri Pippin) is not as extensively known as the Winesap, being introduced at a later period. I will not claim for it first or even second rate in quality, but large size, fine appearance, good keeping and cooking—combining enough good qualities to make it a profitable market apple. No variety, planted in Kansas, has so far excelled it in productiveness and regularity of bearing. The tree is vigorous, and has a handsome form.

The Ben Davis, though not of first quality in flavor, is beautiful in appearance, a good keeper; all things considered, is probably quite as profitable as a market sort as any other grown in our State.

These are my views with reference to the three most prominent winter varieties of apples in Kansas, and I am aware that a great many of our fruit-growers will oppose my recommendations; and I would meet with opposition from some, no matter what varieties I should offer. We all have our preferences, and differ in these respects. We also have prejudices; are apt in many cases to adhere with settled partiality to the fruits of other days and other climes.

I have aimed in this paper to address myself to that class who desire fruit regularly and abundantly; and I might perhaps add to this list two others, viz., Willow Twig and Rome Beauty. To the amateur it undoubtedly is quite satisfactory that he has obtained a well-formed and healthy tree, which now and then yields him large and luscious fruit, but sparse in quantity; but to the fruit culturist, desiring a revenue for maintenance, such conditions fail to satisfy.

I regard the list here given as reliable as any yet tested in our State, and, with judicious selections of varieties for other seasons of the year, is sufficient for a profitable orchard for any farm.

The following report of the Committee on Botany and Vegetable Physiology, by J. W. Robson, Cheever, was read by the Secretary:

REPORT.

Mr. President, and Members of the Kansas State Horticultural Society: In presenting this, our first report in the State of Kansas, on Botany and Vegetable Physiology, we feel much embarrassed. The subject is so extensive, so intimately connected with horticulture in all its departments, and a knowledge of it is so necessary to success in our profession, that it seems only possible to do it justice by employing the best talent the State can produce. We are very sensible that a pen wielded by a hand tasked and hardened by daily toil, and guided by a mind involved in care, and engrossed with the varied engagements of the farm, is hardly the proper instrumentality to educate our fellow-citizens in this interesting and useful science; yet, when necessity is laid upon us, we are willing to impart the little knowledge we possess, and present it in a style so popular that it will be readily understood by the masses.

Botany is the natural history of the vegetable kingdom, comprehending the knowledge of the structure and offices of the several parts of plants. The mere knowledge of the names of plants, and the orders to which they belong, without investigating further, is learning but, as it were, the first alphabet of botany; and unless it be studied in connection with the other departments of nature, and in relation to the economy, properties and uses of plants, it can be accounted as little less than mere pastime.

Vegetables differ from minerals in being organized bodies, possessed of vitality, and capable of assimilating extraneous matter, which is thus rendered subservient to their growth and development. In these respects they resemble animals; although plants are in many respects different from animals, it is yet difficult to define them with precision, for, though one of the more perfect plants can easily be distinguished from a quadruped, a bird, or a fish, some plants so resemble certain animals which are low in the scale of organization (the sea anemone, for example), that it is impossible to separate them by any obvious marks. But the principal differences between the more perfect plants and the higher order of animals are these: Animals move by means of contractile muscles, and have a nervous system, which is not the case with plants. The former have a stomach, or a receptacle for the substances taken from without, in which they are elaborated before they are carried, by means of a peculiar set of vessels, into the mass of circulating fluids; but in plants the absorbed matter is carried directly to the different parts. In animals there is a true circulation of the fluids, commencing at the heart; but in plants the fluids are not impelled by a central organ.

Animals feed on organized, plants on inorganic substances, as air and water. Plants are destitute of lungs, and in their composition carbon predominates; whereas nitrogen is the prominent constituent of animals.

Plants, though not possessing the structure and sensations of animals, have yet a species of life of which inert matter is altogether destitute. They form a link—and a most important one—between dead substances, as rocks and stones, and animated beings. This degree of life is called irritability, or the power which the fibers of vegetables have of being influenced by the touch of other bodies—by light, air, heat and moisture. Thus the leaves of our beautiful Sensitive Brier (*Schrankia uncinata*) shrink and close together on being touched by the finger, much in the same way that a baby's fingers contract when the palm of its hand is tickled with a feather. The Venus Fly-trap (*Dionæa muscipula*) shuts its folding snare rapidly and firmly on an unwary fly or crawling insect, and never reopens until the bodies are consumed.* The common Four O'clock (*Mirabilis*) only opens its flowers late in the afternoon, while the Morning Glories (*Convolvulus*) are only resplendent during the early morning hours. The wood sorrel (*Oxalis*), the common flax, and many others, close their florets on the approach of rain. Some plants turn their leaves and blossoms regularly toward the sun, while others can only be seen in their beauty by close and patient watching during the midnight hours. Darwin says:

"The analogies of plant and animal life are numerous and instructive. The seed of the plant and the egg of the animal contain a supply of food stored up for the young, which is gradually exhausted as the young develops; the carbon and nitrogen in the seed are consumed by the young plant, just as the yolk of the egg is consumed by the hatching chicken. Both among plants and animals, there are great differences in the degree of development attained by the young before they enter the world. A calf or lamb soon leads an active existence, while a young kangaroo is for a long time merely capable of a passive existence in its mother's pouch. So, a cabbage plant receives only enough food for its first pair of leaves, and has to depend for the future on its own exertions, while the seed of the mangrove germinates inside of the fruit attached to the capsule, clings close to the mother plant until it has taken root.

"Among animals, reproduction is largely dependent on the fact that the parents are locomotive, and one sex seeks the other. Among plants, the pollen is practically locomotive, either by the agency of insects, wind, or other causes. The locomotiveness of the mother animal enables her to deposit her young or her eggs in suitable places; among plants the same result is obtained by the seed being locomotive. Some are borne on the wings of the wind, as the seeds of the thistle and the cottonwood, while the seeds of other plants are widely distributed by the violent bursting of the seed vessels, while

* In the year 1832, when a student in an extensive horticultural establishment, the students had charge of a hot-house containing botanical curiosities, amongst which were the *Dionæa* (Fly-trap) *Sarracenia*, *Nepenthes*, and *Cephalotus* (Pitcher plants). These plants, from some cause or other that we boys were unable to discover, were very unhealthy. Visiting the Royal Botanical Gardens at Edinburgh one day, and seeing healthy, luxuriant plants of the same species, we informed Mr. McNab, the clever curator of these gardens, of our non-success in growing these plants. "Feed them," was the reply. "I always catch flies, and place them in the forceps of the Fly-traps, and put them in the tubes of the Pitcher plants, and in winter I cut small shreds of fresh beef and use them instead of flies." When we returned home we tried and continued the experiment, when our plants soon began to exhibit a healthy, luxuriant appearance also.

other seeds are capable of a motion by which they bury themselves in the ground. The seed of the feather-grass (*Stipa pennata*), for example, has a strong point, which twists when the seed is dry and untwists when wetted, and thus damp nights and dry days cause it to rotate. As it is barbed, it gradually bores its way even into hard soils, the barbs preventing any retrograde movement. In the lives of animals, the first needs that arise are supplied by certain instinctive movements, and the powers of growth which exist in young seedlings would certainly be called instinctive if they existed in animals. These are the powers of directing the growth in relation to the force of gravity and in relation to light; the young root goes down, the young stem goes upward, and the fact is so familiar that we fail to think it wonderful."

It is passing strange that we think so little and so seldom about the usefulness of plants, and the pressing necessity for their existence. The earth, however admirably and appropriately formed, would have been but a bare and barren assemblage of rocks, gravel, sand and clay, were it not for the clothing of vegetation with which it is so universally covered. They, too, are almost the sole medium by which nourishment is first extracted from the earth, water and air, and so assimilated as to form the food of animals and man—for every living creature, either directly or indirectly, lives on vegetables. No animal can support itself on air, water or earthy matter alone. Fishes and birds prey upon flies and other insect life, which, either directly or indirectly, derive their sustenance from vegetables. Numerous quadrupeds derive their sole support from grasses, and birds (with the exception of a few species), from grain and seeds. These become the prey of flesh-feeding animals, and afford their sole means of subsistence; and man, as well as some other animals, lives both on vegetable and animal matter. Again, by their decay and accumulation, they form deep and fertile soils. A seed of a minute moss-plant will cling to a bare and barren rock. Others spring from this parent, and accumulate around it; in process of time they decay; new ones succeed them; and thus a deep and sufficient soil is formed for the growth of larger and more perfect plants. Coal probably owes its sole origin to large accumulation of vegetable matter. Vegetable life, too, is highly ornamental, and is thus conducive to the pleasures of man. The beautiful and subdued tinge of green, "the universal livery of nature," is the most pleasing of all colors to the eye. This green is diversified by innumerable blossoms of every varying tint; and groves of trees, with their shady branches, highly contribute to the beauty and usefulness of the landscape.

Plant life commences in an exceedingly simple form, and often so minute as to be invisible to the naked eye. The blue mould found on bread, fruit and other substances, when examined by the microscope, will be found to consist of a number of upright stalks, surmounted by a circular head. This mould is in fact a species of *fungus*; and the round heads contain innumerable small seeds, which, when the plant has arrived at maturity, burst from their covering, and are scattered about, again to spring up as fresh mould. The gray lichen which cover rocks and trees, mosses and ferns, are simple forms of plant life, though somewhat more complicated in their structure;

and thus we ascend in the scale to herbs and shrubs, and the majestic tree of the forest.

The general structure of perfect plants consists of minute cells closely aggregated together, forming tubes through which the sap flows, which contributes to their nourishment. In the tubes of plants the sap ascends from the earth, contrary to the laws of gravity. The juices of vegetables, too, resist the common chemical laws as long as the plant is growing; but whenever it is cut down and deprived of life, these juices run into fermentation, and again return to the elements of earth of which they were originally formed, they being composed of oxygen, carbon, carbonic acid, various salts, as potash, lime, etc., which substances they derive from the air, from water, and from the soil.

Perfect plants consist of a root, stem, leaves and blossoms. The root, stem and leaves serve for the nourishment and growth of the plant; the flowers are for producing seeds for the propagation of other plants of the same kind.

The roots are a series of fibrils which descend into the ground, and by which nourishment is conveyed from the earth to the plant. They are fibrous, as the roots of corn, grain and grasses; tapering, as in the common carrot and radish, consisting of one large central root, from whence other small fibers spring; perpendicular and horizontal, as in the walnut, oak and maple; and as regards duration, annual, biennial and perennial. But the potato is not properly a root, but a tuber; that is, a mass of nutritious matter intended for the support of the plant. The roots of the potato are the long strings or fibers to which the tubers are attached. Neither are the bulbs of the onion or lily a root. The root of these plants consists of the long fibers at the base of the bulb, which is a kind of bud formed by a number of scales, while the essential parts of the root are those minute fibers or spongioles that absorb the fluids from the soil for the perfect growth and nourishment of the plant.

The stem consists of three distinct parts, ordinarily known as *pith*, *wood* and *bark*, to which may be added the *alburnum*, or sapwood. This soft substance can be seen by peeling off the bark. This gradually hardens into wood, forming those circular rings which are seen when a stem is cut across. These are the successive layers of the *alburnum* that are consolidated into hard wood every year. Thus the age of a tree may be known by counting the number of circles in the wood. The *pith* is a soft, spongy substance occupying the center of the stem. In young trees it contains a good deal of fluid; but when the tree becomes old, it is found dry and shriveled, and often entirely disappears. In some orders of plants a hard external skin or cuticle takes the place of bark. It is thin, hard and transparent. It gives support to the hollow stems of reeds, wheat, oats and corn. These, with the addition of the palm family, bamboo, century plant (*Agave*), grow from the top, tube after tube shooting downward in succession. In warm climates

these species grow quickly, some ascending twelve inches in twenty-four hours. The century plant (*Agave americana*) has been seen to shoot out, when in flower, a stalk of thirty or forty feet in nearly the same number of days.

The leaves of plants may be compared to the lungs of animals. They absorb the pure air of the atmosphere, which, entering into combination with their juices, contributes to the life and growth of the plant. They are formed of a frame-work of fibers, intimately netted together, between which is a soft, pulpy substance, like the herbaceous membrane of the stem. The whole is protected by a thin, porous skin. In the center of the leaf runs the midrib, by which the leaf is connected with the stalk. The leaves of plants decompose carbonic acid gas, give out its oxygen, and retain the carbon. During the night, when the sun is absent, plants are supposed to give out carbonic acid. In sunshine they give out oxygen, or vital air.

But the crowning glory of plant life is the blossoms, containing the organs by which seeds are produced for the propagation of the species. Here again is a remarkable similarity in this respect between plants and animals. Many plants are, like animals, male and female. In some plants, as the palm, Osage orange, and our own cottonwood, all the blossoms of one tree are male flowers, and all those of another female. In other plants, as the chestnut, oak and hazel, distinct male and female blossoms grow on the same tree. Corn, squash, melons, etc., are examples of the same fact.

Some flowers are useful to man, in yielding aromatic oils, used in medicine, and for domestic purposes. Honey is manufactured from flowers, by the industry of bees. Flowers, too, impart a fragrant perfume; and no objects are more beautiful or interesting, from the diversity of their colors, enlivening the whole aspect of nature.

There is an obvious advantage in the large number of species, inasmuch that they do not all blossom at once, and thus waste their sweets and fragrance at a particular period. Different species have different seasons at which they come to maturity, and thus a succession is kept up through spring, summer, autumn, and even in the chill of winter.

Having thus passed in hasty review the different parts which compose a plant in the building-up of their structure, we cannot close this already too-lengthy report without pausing to contemplate the power, wisdom and goodness of the Almighty Designer. His power is scarcely anywhere more remarkably displayed than in the immense variety of vegetable products which are elaborated out of three simple elements—oxygen, hydrogen, and carbon—by processes which, as far as we can understand them, appear to be of the simplest description. His wisdom is strikingly evinced in the diffusion of these products over the whole globe. And his goodness is peculiarly manifested in the adaptation of these products to the use of man, in ministering to those various wants which have sprung out of his condition as a rational being, endowed with higher faculties and more varied powers of

enjoyment than of the beasts that perish, and yet dependent for the most favorable use of these upon the judicious employment of the means with which a bountiful Providence has so abundantly supplied him.

Dr. J. M. DeBall offered the following resolutions, and moved their adoption:

PREAMBLE: Being fully impressed with the truth of the poet, that "As the twig is bent the tree inclines," and seeing with regret that the grounds belonging to our public schools are allowed to lie idle, and in many cases unfenced, without any ornamentation whatever, and believing that no system of education is perfect which ignores the elements of practical horticulture: therefore,

Resolved, That we will use all our influence to secure the improvement of the public-school grounds in our respective localities; that we do most respectfully invite the attention of the State Teachers' Association and the State Legislature to this subject, and urge them to take such action in their respective bodies as in their opinion may be needed to secure these ends.

Resolved, That the boards of school districts be urged, through the county Vice Presidents, to adopt necessary measures to plant the school grounds to groves of trees for shade in summer and shelter in winter, and so ornament the house-surroundings as to make the whole a place attractive to the pupils; also, to urge upon the members of the school districts the importance of an introduction of a course of lessons in practical horticulture in our common schools.

REMARKS ON THE RESOLUTIONS.

M. A. PAGE: These resolutions are important and in the right direction. Just in proportion as are the influences in and around the school room, so form the youthful tastes and morals of the pupils.

The resolutions were adopted by a unanimous expression, and on motion, the President appointed Prof. M. L. Ward of Manhattan and Prof. Campbell of Garnett as a committee to offer a copy of the same at the State Teachers' Association, to be held at Atchison the following week, and urge action by that body.

The Secretary announced the receipt of the following essay, which, by request, was read by him:

VEGETABLE PHYSIOLOGY.

BY PROF. A. J. CARROLL, OF OLATHE.

Agriculture and horticulture differ from each other in many respects. They differ in their respective age and origin. Horticulture began in Eden; agriculture after Eden's garden gate was closed. Pruning trees and piling the brush differ also from following a double-shovel plow in stumpy land. Hoeing out weeds and cockle-burs, to me, at least, differs much from hunting grubs in apple trees. Give me, also, horticulture among berries as an employment for vacation, in preference to agriculture among clods.

But seriously, horticulture has so much of science, practically applied, so much that is pleasing, elevating and refining, that it must soon rank among the fine arts, and be open to pursuit by delicate ladies and tender children.

Think of the good time coming, when trees, pruned and proportioned, and in every stage of growth, shall be as much admired and loved as roses and posies! Eden shall then be restored to earth, and praises shall ascend to Him who fashioned the eye to behold and the grand things of earth to be beheld!

Much of the pleasure to be derived from horticulture is lost from not studying it as a science, in an orderly manner, and from overlooking the design which the Almighty Maker has displayed in all his works. Search for design in every part of every tree and its fruit, study it from books and by observation, persist in searching into the mechanism of the entire tree, and the manner its mechanism is made subservient to the accomplishment of its chief end, and intense pleasure will be derived from the pursuit.

The catechism says, "The chief end of man is to glorify God"—a good and sound doctrine. A fruit tree has likewise a chief end. Besides glorifying its Maker's wisdom, and setting it forth to intelligent beings, it has a subservient chief end. This is two-fold—first, to live and grow; second, to produce seed and die. The chief end of a noble apple tree is not to produce fruit for the lovers of good eating, nor to bring in money to its owner. Both of these it does, and makes men happy; but they are collateral and subordinate to growth and self-reproduction. Keep these distinctly apart from the higher objects of its life, in studying vegetable physiology.

The subject naturally appears to view under two heads—first, the framework or mechanism of the tree; second, the mechanism in action, carrying on its process of growth.

Take a tree out of the earth—its roots, fibers, leaves, flowers and fruit—in every state of advancement, and examine it. The frame-work consists of three general divisions—the root, trunk and limbs, and leaves, each having a distinct office to perform. The root attaches to the soil, supporting all that rises above ground, and drawing proper plant food from the soil; the trunk and limbs support the leaves and fruit, bearing them up into the air, and are a highway for juices to pass up and down from roots to leaves. Leaves spread out like a fan, exposing a large surface to air and sunlight. Now, cut the tree across, and see it composed of layers in concentric circles, each occupying one year in growth. Outside of all, a protection against drying winds and the ravages of insects is a covering of bark.

Having obtained a general view, next take the microscope and examine minutely sections cut from various parts, and what a wonderful sight will meet the eye! Millions of cells! In the very threads of the roots, in the hard wood, in the bark, in the leaves, in the very delicate petals that blush in the sunlight, cells, cells, cells! The whole tree is made up of cells! How small they are! How thin their walls! How they press one against another, adjusting themselves to the pressure, like a pile of empty egg-shells, but infinitely smaller. What a sight! The whole tree—roots, trunk, leaves, flowers and fruit—one conglomeration of cells. Here is science; here is

study; here is *horticulture*. Look again at these cells. From 300 to 1,500, side by side, will only extend one inch. They press upon one another, and thus lengthen in the direction of the axis or center of the tree. They are perfectly closed up on all sides, having no openings from one into another. The walls are very thin, however, but sometimes by growth they thicken, and even in some cases fill up entirely. There are, however, small open spaces between sets of cells, so to say, called ducts, and in green wood are filled with a watery fluid. But the cells themselves, in the growing part of trees, are filled with a watery fluid, and, strange to tell, the principal circulation is chiefly confined to them. The watery fluid containing mineral matter of the sort wanted by the tree is in all these cells. Up one side, across the top, down the other side, across the bottom, around and around goes the sap in each cell. How it ever gets out and up into the next, with its precious load of nutrition, is a question not so easily answered as asked. But it does, nevertheless, and that without any openings to the cells. Consult philosophy on endosmose and exosmose, and the answer can be made out. Start a boat-load of mineral matter at the tip end of the rootlets, where the ever-gaping mouths are always hungry for more, and it will pass along from cell to cell in its whirling, eddying pool of pure water up to the leaves, the *mills* of the plant. There, many feet from the ground, in the delicate surface of the leaf, air reaches it and assimilates it into plant food; thence it descends by its own proper highways to every growing part of the plant or tree.

A tree, then, is a collection of a vast number of small cells, crowded one against the other, without any visible openings in them, and arranged into what we call the various parts of a tree, and filled with a watery fluid containing mineral matter. Such is the mechanism of every tree, herb and blade of grass.

Trees are simply machines. What, then, is the power that sets them in motion? God made it in abundance when he said, "Let there be light." The warmth and actinic force which accompany light act first upon buds or leaves, giving the stupendous pump a start. As with winds, when, on a warm summer's day, that still and sultry quietness portentous of a storm at some point, the equilibrium is broken by a whirl of air, and presently from all points there sets in a breeze to fill the vacuum—so sunlight breaks up the equilibrium of the tree's forces by chemically uniting and condensing in the buds or leaves, and presently every cell acted upon by its neighbor just above is found to be in activity. Activity is life, quietness is death. The tree may sleep, when its organs only slightly perform their offices. Even winter may for several months suspend operations; but it is only a rest. Spring, warmth and light, and the ever-present actinic force accompanying, touch the folded leaves in the buds, knock on their hardy encasements, and they waken up to commence anew their daily labor. They need no Sabbath: night and winter are sufficient for repose. But there has been no death; age brings death

naturally; accidents may bring it; insects may bring it; extremes of heat and cold may bring it. But the years of a tree's life are determined, as are those of man. "Three score and ten shall man's life be." Exceptions to a rule are in the decrees of God. The forces of nature are under his control, and wisely, too.

But let us look at this tree once more, and keep a sharp lookout for design, not only in the mechanism, but also in the mechanism in its relation to chemical forces which are so constantly at work. Take a leaf; it has an upper and lower surface. The upper receives the sunlight; the lower generally cannot endure for any length of time the direct rays of the sun. The upper surface is denser and of a deeper green color. By the aid of the microscope, we discover this color is due to the presence of a substance called *crophyll*, lying loose within the cells. The walls of these cells are nearly transparent, and more compactly placed upon the upper than lower surface; hence, there is a deeper tinge of green and a greater endurance of light, heat and pelting storms. The surface is thus just fitted for its intended uses. Again, over all the extended surface is spread a thin covering called *epidermis*, or skin; and through this are multitudes of minute openings, but far more numerous upon the lower than the upper surface. These are the mouths of the leaf. Air and its odors and gases, together with watery vapor, always present in the growing season of plants, finds access through these openings to all the interior parts of the leaf. Now what happens? Evaporation from the leaf would take place so rapidly that death would soon result to the plant, were it not for the thin covering. That *epidermis*, or covering, retards the evaporation. When the air is too dry, and evaporation would be too rapid for the leaf, these openings close, keeping the moisture within; and when not too dry, they open, and evaporation is allowed to go on. What a manifestation of intelligent design!

But evaporation is not growth, nor the preparation of plant food suitable for growth. A chemical change must be produced somewhere in the plant, and the leaf is the appointed place. The leaf breathes as surely as we breathe. Stop the breath, and you die. Destroy the leaves, corresponding to the lungs in animals, and death ensues.

We will close this essay upon vegetable physiology, by presenting the chemical changes produced by the leaf.

Any vegetable consists of two parts or classes of chemical substances, wholly distinct, viz., earthy and organic. Earthy form from 1 to 10 per cent. of its fabric; organic, from 90 to 99 per cent. The earthy are merely adventitious, forming no great or important part, and, on burning, return to earth whence they came. *Silex* or flint, lime, magnesia, iron, sulphur, etc., are among the earthy materials. Organic, the essential and valuable part of the fabric, consists of oxygen, hydrogen and carbon—three elements. Air and water are the sources whence comes food to plants. Air consists essentially of a vast ocean fifty miles deep of nitrogen gas, mixed

with another ocean of oxygen gas equally deep—four parts of nitrogen to one part of oxygen. Nitrogen *alone* smothers and puts out fire and life of every kind. Oxygen *alone* feeds fire to make it burn even iron and steel, and makes life too intensely exhilarating. *Mingled*, not chemically combined, they balance each other and make up the pure air. The supply of oxygen, then, is abundant in the ocean of air. Hydrogen is an organic ingredient in vegetables. Its supply is equally abundant. An ocean of water several miles deep, and covering three-fourths of the globe, supplies the air, by evaporation, with its moisture, which, by the constant motion of the air, is conveyed to the mountains, hills, plains and valleys, and descends to earth in rains and dew. The earth retains the moisture near the surface in sufficient quantities to supply vegetation. The air always holds more or less water in a state of vapor. Water consists of one part hydrogen, one part oxygen, chemically united. Their hold on each other is very tenacious. When set free, both become invisible gases; united, they form the pure water we drink. Oxygen and hydrogen come to plants as food, either through the openings in the epidermis of the leaf or through the ends of the rootlets in the ground, and air brings it to the leaves and water brings it to the rootlets; hence, water is the natural blood or sap of the tree, and air its natural breath. Both contribute to the nourishment of the tree. But there is something lacking; without carbon both would be simply ten parts oxygen, ten parts hydrogen, or pure water. Carbon must enter into the material of trees. But how? It will not dissolve in water, and so cannot be carried up in the sap from the ground, for it cannot pass through the walls of the cells, only as a fluid or gas. It is abundant in the ground, and is held there by gravity; and can it rise and enter every part of root, trunk and leaf? It refuses totally to be dissolved in water, yet it must form about half the weight of the wood. Burnt or charred wood exhibits it as charcoal, composing largely the walls of the cells. Behold design again: ten parts oxygen, ten parts hydrogen, and twelve parts carbon must come together in chemical union. Behold, the willing tens of each of the former come dancing along in mid-air, and whirling along up toward the leaf in water, locked in strong embrace with its fellow-traveler. Since the twelve parts of carbon refuse to go alone, their Maker has provided a fierce companion to grapple and hold them firm, bidding them obey the divine behest, "Let the earth bud and bring forth fruit abundantly." The fiery oxygen, the Lord's messenger to do his bidding, searches out the carbon, forms its happy union, flies away as gas, pervades the air in just the right proportion to be food for plants and not death to man, made in God's image, and, along with the moving air, comes in contact with the air-cells in the leaves of trees. Then this carbonic acid gas deposits its burden and flies away again, to bring joy and gladness to the heart of some man or woman, and roses to the cheek of youth. Man breathes in oxygen; breathes out carbonic acid gas. Plants and trees breathe in carbonic acid gas; breathe out oxygen. Wonderful arrangement—just proportion—Infinite wisdom!

But many times more carbonic acid is found in the earth, especially when manured, than is found in the air. As a gas it can pass along with the water through the roots, through the cell-walls, up to the leaf; and there the three materials, oxygen, hydrogen and carbon, arrange themselves under a divine law, and, as prepared food, are conveyed to all the growing parts of the tree. Just under the bark, next to the last year's growth, the work of forming new cells goes on, and next to the former layer the cells form a new layer; next to the bark they form new bark. This annual layer increases the diameter: the inside bark, constantly forming, forces the outside or old bark still further out. The tips of the limbs extend by multiplication of cells. And so the work goes on. Vegetable growth is, then, the product of a multiplication of cells, under a divine law as simple as it is sublime.

The Secretary also read the following communication on Lunbeck's "patent compound:"

LETTER OF S. H. STEVENS.

HUMBOLDT, KANSAS, June 13, 1878.

G. W. ASHEY, *Secretary Southeastern Horticultural Society, Chanute, Kansas*: I have the honor to inclose recipe of J. B. Lunbeck's "patent compound." You may have full knowledge of its merits, but as it is new to me I respectfully call your attention to it. Should you think it of sufficient importance, please investigate. The preparation and rights are being sold throughout the State. If there is any merit in it, the State Horticultural Society should indorse; if it is only another name added to the list of humbugs, our people have the right to demand protection from the State Society.

Respectfully, S. H. STEVENS.

[Indorsement.]

CHANUTE, KANSAS, June 15, 1878.

Respectfully referred to the Secretary of the State Horticultural Society, with the request that the within-named "patent compound" be considered by the State Society, and reported.

G. W. ASHEY,

Secretary Southeastern Horticultural Society.

J. B. LUNBECK'S RECIPE TO SAVE FRUIT TREES FROM BOREES.

Take one gallon pure pine tar, one half-pound strong soap, one quart strong lye. Boil all together slowly, for about twenty minutes, in some iron vessel, over an out-door fire; then remove it from the fire, and immediately, while hot, add two tablespoonfuls of fine lime and one half-pint of good fine ashes, and one half-ounce of oil of tansy. Stir the compound from the time it begins to warm up until it is all done and cooled off.

Prepare the lye as follows: Common lye from wood ashes is preferred. If this is not convenient, use concentrated lye and soft or "broke" water. Add to the lye one-fourth pound of cheap plug tobacco, cut into small pieces, so the boiling will dissolve it. Boil this until so strong that by dipping the wing feather of a fowl in it, it will cut in two or three seconds; then it is ready for use. The lime and ashes must first pass through a fine sieve. If the lye is not strong enough after the compound gets cold, the lye will separate from it and rise to the top, thus destroying the cement and rendering the compound worthless. Should the compound at any time become too thick, warm it up to a boiling heat, and add a little of the strong boiling lye, and stir well while hot.

The compound must be as thick as can be spread with a paint brush, so it will form a heavy coat around the tree.

HOW TO PREPARE THE TREES.—First excavate the earth from around the trees, two or three inches deep, in the form of a basin; then remove all rough or scaly bark; clean out all the worm dust, dead bark and rotten wood, so the compound will come in contact with solid wood, and thus it will heal the wounds which the worms and knife have made; otherwise those wounds will cause rotten places, and finally the death of the tree. This done, take very thick, strong soapsuds; to a bucketful add one quart fine wood ashes, and one pint fine air-slacked lime. With a half-worn broom give your trees a thorough scrubbing. This produces a healthy bark, and is the best known invigorator for fruit trees..

As soon as this is dry, take a small paint brush and apply a heavy coat of the compound from the roots to a distance of seven or eight inches up the tree. As soon as this is dry enough so the dirt will not stick to it, replace it around the trees so as to have the compound two or three inches below and six or eight inches above the ground. When your trees are thus cared for, they are safe for the year.

The foregoing directions are for the first year. After that, one application every spring will secure our orchards from their enemy, the borers.

REPORT OF COMMITTEE ON J. B. LUNBECK'S PATENT TREE WASH.

This letter called forth the following report of the committee already appointed to investigate the "compound:"

Your committee would beg leave to report that they find the compound to be made of pine-tar, soap, lime, concentrated lye, ashes, tobacco, and oil of tansy. We have examined trees to which the compound has been applied. One tree, which had two of its branches recently stripped of bark for a distance of four inches in length and the wound covered with this compound, was pronounced by your committee dead, to all intents and purposes; and, although the foliage has not yet wilted, the wood under the wound is brown and the cambium layer entirely destroyed. No injurious effect was discovered in the peach and apple trees, where the compound was applied to the bark. What will be the effect thus applied, your committee are not prepared to say.

The large proportion of tar used in this compound we believe to be detrimental to the health of the tree; the soap we believe to be useful; the lye, ashes and lime might also be of some benefit, if applied at a proper time, to destroy the peach-tree borer; the oil of tansy and tobacco would also be injurious to the borers if applied directly to the unprotected insect.

It is the unanimous opinion of your committee, that this compound of J. B. Lunbeck is, so far as having any real value to fruit growers, a failure and a swindle.

H. E. VAN DEMAN,
G. Y. JOHNSON,
L. A. WALKER,
Committee.

On motion, the report was adopted.

The committee to visit the fruit farms of D. W. Houston and S. Buchanan, near Garnett, reported as follows:

REPORT.

Your committee, to whom was referred the examination of the orchard and vineyard of Col. D. W. Houston and orchard of Samuel Buchanan, near this city, beg leave to state that they have visited said premises, and, after careful examination, have formed the following conclusions in relation thereto: We find the decline of the vineyard referred to, to be due to—

1. Unsuitable soil, which could be partially remedied by draining.
2. Injury from defoliation by grasshoppers in 1874.
3. Severe pruning.

We found Col. Houston's orchard adjoining the vineyard, the trees planted twenty-six feet apart each way. Maiden's Blush trees loaded with fruit. Ben Davis, Lowell and Jonathan were carrying crops less in quantity than

Maiden's Blush, but in advance of any other varieties in the orchard. His pear trees are fruiting well; plum trees a failure. Upon this farm are several acres of forest trees, set for ornamentation and shade, among which are ash, elm, catalpa, cedar, and golden willow.

Leaving this farm, we proceeded to that of Mr. Buchanan, and found in his house-lot, growing in fine condition, red cedars, European larch, blue spruce, Norway spruce, American arbor vitæ, and many flowering shrubs. In his orchard we found several large trees in dying condition. The bark was entirely dead nearly around the bodies, and for ten inches in height. These trees are set sixteen and one-half feet apart each way. The ground is nearly level and very wet, and evaporation is very slow, on account of the heavy shade of dense tops in closely-planted rows. The proprietor does not believe pruning of any benefit, which accounts for the density of the heads. That portion of his orchard planted on well-drained soil is in fine condition.

J. L. WILLIAMS, *Chairman*.

REPORT OF COMMITTEE ON NEW SEEDLING PEACHES.

Your committee find on exhibition one variety by H. E. Van Deman, Geneva; three varieties by E. J. Nugent, Ottawa; one variety by Frank Page, Garnett; two varieties by J. L. Williams, Oswego; two varieties by R. Milliken, Emporia. The names, so far as determined, are given, and the report of committee as to size, color and quality, followed by history of origin, etc., by the exhibitor.

VAN DEMAN'S EARLY.

Size, medium; color, light; quality, fair; pit partially adheres to flesh; fruit ripening June 13th; worthy of trial.

History.—The samples shown are from neglected nursery-grown trees, all similar in general appearance, and having the same period of ripening. These trees are in crowded rows, which prevents the circulation of the air, and have had no culture during the past two years, consequently the samples are comparatively deficient in size, flavor and color. This (1878) is their first year of fruiting.

NUGENT'S JUNE.

Nugent's Seedling, No. 1.—Size, medium; color, red cheek on sun side and greenish yellow on opposite; flesh, greenish white; quality, good; a clingstone, ripening June 20th; first fruiting, 1877.

OTTAWA EARLY.

Nugent's Seedling, No. 2.—Size, medium; color, dull red, on greenish base; quality, fair; quite promising in appearance; first fruiting, 1877.

NUGENT'S 14TH JUNE.

Nugent's Seedling, No. 3.—Size, medium; color, deep red, on white base; quality, good; ripening June 14th.

History.—No. 1 was grown from seed planted between apple trees in or-

chard, without any special culture, and bore fruit last year for the first time. The fruit is fine meated, high colored, sweet, and high flavored.

No. 2 was grown from the seed, on unbroken sod, without any culture; not even a hoe ever used about the tree. Bore for the first time last year. Fruit good flavored, freestone, and large size.

No. 3 was grown on unbroken sod without culture. It is of good quality, and fruited this year for the first time.

All three varieties were originated by E. J. Nugent, of Ottawa.

TOWN'S EARLY.

Size, above medium; color, dark-red cheek on yellowish-white base; quality, good; highly recommended for trial; partially adhering to the pit.

History.—In August, 1874, the pits of three Hale's Early were planted where the peaches were eaten; two of the peaches were fully ripened, the other was not. All were planted in calcareous soil, in good condition, within a few feet of each other. The samples on exhibition were picked from the trees grown from the pits of the fully-ripe peaches. The tree grown from the pit of the unripe peach produces a late, inferior fruit.

TWO VARIETIES BY J. L. WILLIAMS.

Seedling No. 1 (not named) resembles the Amsden June in every respect. Seedling No. 2 (named Majors's Early) cannot be distinguished from the Alexander, except in color.

History.—No. 1 originated with Mr. Ellis, twelve miles west of Oswego; samples were taken from two-year-old trees; fruit ripening June 16th. No. 2 (Majors's Early) originated in the garden of Mr. Majors, at Oswego. Tree vigorous, under ordinary orchard culture; samples were taken from trees two years old. It is claimed for this peach that, coming in immediately after the Alexander, it will prove a valuable acquisition, ripening fully fifteen days before the Hale's Early.

TWO VARIETIES BY R. MILLIKEN.

No. 1 resembles the Amsden, but ripening in advance of it; flavor and appearance fine; recommended for trial. No. 2 is locally known as the "Emporia;" a fair early peach, ripening ten days in advance of the Amsden; recommended for trial.

History.—No. 1: The seedling peaches exhibited by Simon Bucher, living twelve miles southeast of Emporia, are from a lot of seedlings, consisting of about ten thousand trees, about twenty or twenty-five of which are of the same character as this plate of samples; the seed were not selected with any care as to kind, and are purely accidental; ripe June 18th. No. 2 is an accidental seedling tree, found on the farm of Mrs. Louisa Burns, one mile northeast of the city of Emporia, Lyon county. The tree is seven or eight years old, and stands on low bottom land, about fifty feet from the Neosho river, and within a few feet of the banks of an old channel or bayou, filled

with water three-fourths of the year. An untrimmed hedge, now as high as the tree, stands between it and the bayou on the north, and an orchard thirty or forty rods in width protects on the south side. Attention was first attracted to this tree in 1876, and an account was given to this Society by H. E. Van Deman at the eleventh annual meeting, in 1877. (See p. 77, vol. 7, *Kansas Horticultural Report*.) The first ripening of fruit was this year, June 13th. I believe it to be ten days earlier than the Amsden June, and much superior in quality.

An invitation of the Franklin County Horticultural Society was read by its delegate, H. P. Welsh, and on motion referred to the Executive Board, with recommendation that it be considered favorably.

INVITATION OF FRANKLIN COUNTY SOCIETY.

To the Officers and Members of the Kansas State Horticultural Society: We, the undersigned citizens of Ottawa, Franklin county, most respectfully and cordially invite you to hold the next annual meeting of your Society at our city, and promise all in attendance at that meeting free accommodations.

E. J. NUGENT, President,

H. P. WELSH, Secretary,

ISAIAH PYLE, Treasurer,

Franklin County Horticultural Society.

The Secretary, by request, read the following essay:

EARLY SPRING FLOWERS.

BY J. W. ROBSON, CHEEVER.

We can heartily sympathize with the florist's unwearied care, and glowing hopes and anticipations, in nursing some new pet of unknown beauties, until at last his heart is gladdened and the horticultural committee thrown into spasms of ecstasy by the exhibition of this wondrous novelty. Yet for all that, give us common folks the dear old flowers that will grow. Especially do we prize the dear old friends that used to smile upon us from our mother's garden: the daffodils, the jonquils, the bluebottles, the primroses and the pansies, the lilacs and the snowballs, that have come to us year after year, bearing, besides their lovely fragrance, a rich freight of memories gathered on our life's journey. They have become, in truth, our heart's calendar of loves and hopes and joys and sorrows—

“Even as a song of other times
Can trouble memory's springs,
Even as a song of vesper chimes
Can wake departed things,
Even as a scent of vernal flowers
Hath records fraught with vanished hours.”

But we are wandering from the practical. Of all the early spring flowers, the crocus does not need our vote to crown it queen of the season. But few

persons are aware how very easily it is grown. The only difficulty is in its first introduction. We are obliged, in the beginning, to procure imported bulbs, and the crocus does not like to be imported. It is not fond of being shifted too often, nor of being out of ground too late in the season. Of newly imported, we have generally lost one-half, the first season. But as they are cheap—only about \$1.25 per hundred—we can afford to lose a part of them; and after being once acclimated, they propagate rapidly, and will then take care of themselves.

We love the snow-drop, the first flower of spring. This flower, when well established, will take care of itself, and yearly produce a profusion of drooping, white blossoms.

Next in succession comes the pansy; and of all the rare virtues of this peerless spring flower, it has no other trait that we prize so highly as its brave cheerfulness in lifting up its bright, child-like face to the first fitful sunshine of spring, just as soon as the tyrant, Frost, has let go his grip upon the earth. Pansies sown early, in the open ground, will bloom finely in the autumn, and, being protected during winter by a light covering of cornstalks and dry leaves, will be ready to come out in a blaze of beauty next spring. We greatly enjoy an old pansy bed, where they have been permitted to sow themselves, and sport into all manner of shades of color, for a number of years successively. We know such flowers would not stand the florist's test, but they are fine "for home consumption."

The English violets, white and blue, double and single, stand high in our estimation. The exquisitely-delicate fragrance of these flowers places them beyond all praise. They are of the easiest culture, especially the white, which is much the most hardy. It propagates itself rapidly, both by layers and seed, and only needs the soil kept rich and mellow. Yet, as the flower buds are pretty well grown in the autumn, it is necessary to protect the beds as recommended for pansies; otherwise the buds will be destroyed, and there will be no bloom. We have often had them show such a quantity of flowers that, for profusion, we could compare them to nothing but a bed of white clover in full bloom; while the air, loaded with their perfume, seemed like a breath from the regions of the blest.

We have a number of flowering shrubs which bloom so early in the season, and so profusely, that they deserve more than a mere passing notice in this short paper.

First comes the June or service-berry (*Amelanchier*), the *avant courier* of spring, with long white plumes; the red-bud (*Cercis*), none the less valuable for garden decoration because it is a native to the "manor born;" the yellow bell-flower (*Forsythia*), a free-growing shrub, with very dark green foliage, and a great profusion of yellow, bell-shaped flowers—(this should be protected in winter, to preserve the flower buds, which are formed in autumn;) the double flowering almond (*Amygdalus*), which, this spring, was one huge bouquet of pink-colored blossoms; the red flowering currant (*Ribes*), bearing

bright crimson flowers in great abundance; the Japan quince (*Cydonia Japonica*), that was so popular in olden times, and ought to be popular now, in this age of novelties, is the brightest-colored spring flower we have; and last, though not least, the lilacs—abundant bloomers, and ranging in color from white to dark purple.

We do not see how any real lover of flowers can, at the season of which we are now speaking, afford to dispense with a bed of the early wild flowers. Let it be located in some sheltered nook, half sunny, half shady, where the autumn leaves huddle themselves together to escape wild, hurrying winds. Let there be a liberal supply of leaf mould, in the beginning, replenished occasionally in succeeding years, and it will require little other care, save that of setting the plants. Plant here the wild ear-drop (*Dicentra*), with its spike of funny little gems; the liverwort (*Hepatica*), whose profusion of bloom gives us red, white and azure; the delicate wind flower (*Anemone*), one species white, another red, and still another the faintest shade of rose purple; the columbine (*Aquilegia canadensis*), which, for regal splendor, is not equaled by any flower of the tropics; the bright, golden corydalis, whose great vigor of growth will require plenty of room in the center of the bed; the wee, modest, blue-eyed grass (*Lisyrinchium*), with its white and blue spikes; the pretty spring beauty claytonia, with its white and pink striped bells; the snow-white blood-root (*Sanguinaria*); and by no means least of all, the deep-blue violets. These last are so kind and accommodating in their habits, that they are like unto some people, who seem to be slighted and imposed upon simply because they are so kind and forbearing. The Easter flower (*Anemone pulsatilla*), the best of all the early flowers, should have the best place.

Many more might be added to our list, did we desire to make it complete; but those we have given are sufficient for our own purpose. Every lover of wild flowers can yearly be making additions to his or her collection of these beautiful children of the early spring.

Robert Milliken, of Emporia, read the following paper:

THE CATALPA AS A SHADE AND TIMBER TREE.

To persons on this comparatively treeless region known as "The Plains," the importance of a tree valuable for shade and timber is not to be underrated. The kind of tree for this purpose must be readily and easily grown, either from seed or cuttings, on ordinary farm soils, without expensive artificial means of protection to the young plants, and must grow rapidly with ordinary culture; and, above all, must be of value for its timber. Several of our native trees meet these conditions in one or two of these particulars, but fail in others. The cottonwood, soft maple and silver poplar are easily propagated, and of rapid growth, but are of little value for their timber. The ash, honey locust and walnut each have merits, but do not answer to all the above conditions, each failing in some important particular.

The object of this paper is to call attention to the Catalpa (*Catalpa bignonioides*), as fulfilling, more nearly than any other tree, these conditions.

The tree is a native of the middle belt of the United States, being found in abundance along the Ohio river from the mouth of the Scioto to the Mississippi and beyond, as well as along the larger tributaries in Indiana and Illinois, being found in its greatest perfection in southern Illinois and south-eastern Missouri. The following facts regarding its value are condensed from a small pamphlet recently issued by the veteran car builder of Dayton, Ohio, E. E. Barney, entitled "Facts and Information in Relation to the Catalpa Tree."

Dr. J. A. Warder, in his annual address before the Ohio Horticultural Society, at Toledo, remarks as follows:

"Another tree of rapid growth, and with a promise of great utility, is the catalpa, of which wonderful stories are told of its powers of resisting decay. Gen. Harrison, when Governor of the Northwest Territory, found catalpa pickets in the old French stockade at Vincennes, that were still sound. One of the early settlers of Knox county, Ind., found a catalpa log that had fallen across a stream in such a way that it served as a bridge, and had evidently been thus used by the aborigines for so long a time that it was quite flattened by the pressure of their feet. He asked an old Indian how long that bridge had been there. The reply was, 'My father's father crossed on that log.'"

C. M. Allen, of Vincennes, Ind., in answer to inquiries by Mr. Barney, replies:

"Your inquiries as to the durability of the catalpa tree, I can only answer in a general way, and for a limited time, as I have been a resident here for only thirty years. During that period of time, I have seen much of it in posts and timbers of buildings coming in contact with the ground, and my observation is that it is the most durable of all timber. For railroad cross-ties it is better than either mulberry or cedar. A gentleman has just stepped into my office, who informs me that he has it in fence posts of twenty-two years' standing, and that they are as sound and firm, apparently, as the day they were put in. It may be regarded as next to iron for railroad cross-ties, if the wood is firm enough to hold a spike. In fact, it may be regarded as imperishable under or lying on the ground."

Prof. John Collet, in the report of the Geological Survey of Indiana, for 1873, says, on page 364:

"Catalpa trees two and three feet in diameter are found in Knox county. One, twenty-five inches in diameter, had thirty-seven rings of annual growth, indicating an increase in size during that time of over sixty seven hundredths of an inch per annum. A catalpa gate-post set in the ground by Col. Decker in 1780, near the school house on Deshee creek, was cut up for firewood in 1871, and was found in fair condition after doing service for nearly a century. President Harrison, on his visit to Vincennes in 1840, publicly called attention to the fact that the picket fence built by him along the river-front of his former residence, was in good order after forty years' service. The portions of the posts buried in the earth were found as sound as if cut yesterday. Catalpa posts set by Gen. Harrison about the Governor's house in 1808 were taken up, Mr. Pidgeon informs me, a few years ago, and, being sound, were reset in another place."

Prof. T. J. Burrill, of the Illinois Industrial University at Urbana, writes:

"While collecting specimens of the trees of Illinois for the Centennial, I found some

boards sawed from a catalpa log some two feet in diameter (so that the boards were nearly two feet), which was known to have lain on the ground one hundred years. One man had known the log to have thus lain during forty years of this time, and he had the information as to the previous sixty years. This was in the extreme southern portion of Illinois, about twelve miles from Cairo, in the Mississippi bottoms. The wood is still sound and strong, and susceptible of a fair polish, though not as good as fresh specimens."

In an essay on the best practical means of preserving and restoring the forests of Ohio, by Daniel Milliken, Hamilton, Ohio, in the Ohio Agricultural Reports of 1871, he says of the catalpa:

"This handsome and valuable tree is a native in all the Southwestern States, but is everywhere rare. The few ancient groves in southern Indiana and Illinois may be native, and at all events the tree is hardy in any part of Ohio. The tree is not a large one at maturity, but makes a fine trunk in groves. The rapidity of its growth in youth is astonishing, and it seems to grow well on any soil. Catalpa wood is coarse in grain, light and brittle. Its value arises from its great durability, even when exposed in air and damp at the same time."

Upon the value of the wood, Mr. Barney writes:

"Three years ago I cut from a catalpa tree that had been cut down after growing thirty years as a shade tree, two railroad cross-ties, and placed them in a track over which trains pass every hour—one under a rail joint. The spikes show no signs of loosening. The catalpa does not hold a spike as well as oak, but sufficiently well for all practical purposes. It does not split easily. While not as tough as some woods, it should not be termed brittle, as stated in the extract from Milliken's essay. I subjected pieces of catalpa, oak and ash, one inch square, to a breaking pressure, twelve inches between supports. The catalpa broke under a pressure of 703 pounds; ash, 890 pounds; one piece of oak at 577, one at 709, and one at 1,141 pounds. The catalpa deflected three times as much as the oak or ash before breaking."

Again he says:

"Very recently I tested pieces of catalpa cut from different trees, with a variety of wood, with the following result: Pieces of catalpa one inch square broke—with a pressure applied at the center between supports twelve inches apart—at 540, 500, 790, 500, 575, 752 and 762 pounds respectively. Black walnut, under same circumstances, broke at a pressure of 1,042 and 848 pounds; ash, 1,216 and 1,040 pounds; oak, at 932 and 1,008 pounds; Norway pine, 384, 548, 584 and 640 pounds; white pine, 448 and 384 pounds; white walnut, 608 and 480 pounds. Five thousand pounds pressure on a block of oak one inch square, resting horizontally on a solid foundation, compressed it to five-eighths of an inch, another to five-eighths of an inch, and another to one-half inch. The same weight compressed one piece of catalpa to seven-sixteenths, another to seven-sixteenths, one to nine-sixteenths, and one to seven-sixteenths. White pine was compressed to five-sixteenths; Norway to six-sixteenths; white walnut to five-sixteenths; yellow pine to six-sixteenths; black walnut to ten-sixteenths and eight-sixteenths; ash compressed one way only to fourteen-sixteenths, another to six-sixteenths. These samples were taken at random, and would indicate that catalpa will bear the pressure to which it is subjected when used as railroad ties. Two catalpa railroad ties have been in use near our office over four years, and twelve others for the last five months. All hold their spikes well, and show no indications of mashing more than oak each side of them, and over which heavily-loaded trains pass almost hourly."

Catalpa trees have been used for shade trees in the central States for a

good many years, but on account of its liability to have the tender shoots killed in winter in the North, and its rather straggling, irregular growth when planted in open ground, it has not been as generally planted as its merits deserve. The tree is hardy enough for any part of Kansas, and the objection of its irregularity may be easily overcome by cutting the tree off close to the ground after it has been two years set, thus inducing a rapid upright growth in a single stem to the required height. About the only way to get a straight, clean stem to a walnut or oak is to cut it off in this way, after it has got established. In groves no difficulty will be experienced, if the trees are set one or two feet apart in rows four feet from each other.

It grows readily from seed sown in nursery rows in the spring, and for groves should be set in place at one year old, and given the same care for two or three seasons that would be given to a field of corn to secure a good crop. At 12 or 15 years they should be thinned out by taking each alternate row, and thinning in the rows to four feet, and used for fence posts and poles. In from 12 to 15 years more the remaining trees, if they have been in good ground, will make four to six ties each.

Mr. Barney, in concluding his pamphlet, uses the following language:

"There cannot be less than 200,000,000 ties in the various railroads in the United States. At 200 ties per acre, it has required 1,000,000 acres of well-timbered land to furnish them. The average life of ties is hardly more than five years. It requires 200,000 acres of land each year to keep up the supply. Three times that amount is required each year to furnish the lumber used in bridges and rolling-stock. It requires the lumber on 1,000,000 acres of land each year to supply the wants of our railroads for all purposes.

"If the foregoing facts have demonstrated that the catalpa will resist decay equal to any, if not better than any other timber, that it is suitable for ties, that it can be readily cultivated and grown in very large quantities, is it not an exemplification of that wisdom that forecasts the future and provides for its necessities, that all railroads in that portion of the country where it may be grown, plant at once enough at least to provide for their own future wants? Is it not equally wise for farmers to plant, not only enough for their own needs, but enough to supply their less-provident neighbors, and also to supply the wants of numerous railroads, who for various reasons do not provide for themselves, but depend on others for their supply?"

There are two varieties of catalpa, differing but little in tree, except that one, which Mr. Suel Foster, of Iowa, designates as the *hardy*, to distinguish it from the common, blooms earlier, and has larger and more abundant bloom, and larger seed-pods, and will endure a much greater degree of cold than the original.

Mr. J. C. Teas, of Carthage, Mo., writes me under date of May 20th, 1878, regarding the origin of this sport:

"Besides the common well-known *C. bignonioides*, or *Syringifolia*, there is one—perhaps only a variety—which we have grown for about twenty-five years, and which is distinct and greatly superior to the common in all respects. In growth it is much more vigorous and upright, so hardy as to stand the winters of Iowa, larger, deeper green foliage, much larger and more beautiful flowers, which appear a month earlier than

those of the common, followed by seed-pods two to four times larger than those of the common.

"*What we Know of its Origin, etc.*—Perhaps fifty years ago, a family planted two catalpa trees on a farm two miles south of Dayton, Ohio. The family soon afterward left, and we have no further trace of them; hence, we are unable to get any trace of the two trees, or how or where they got them. These trees grew up and attracted attention by their superiority to other catalpa trees, of which there were plenty in the vicinity. Job Haines, a nurseryman at Dayton, procured seeds and disseminated the new variety, and it is from these that the present stock is grown. It was first brought to public notice, I believe, in Dr. Warder's *Western Horticultural Review* for August, 1853."

Adjourned.

THURSDAY EVENING.

President Gale in the chair. Exercises opened with music. The committee on the floral exhibitions during the sessions reported as follows:

REPORT.

MR. PRESIDENT: Your committee appointed to examine the flowers, plants, etc., placed on exhibition during the sessions of this meeting, beg leave to state that we find the following:

By Mrs. De Wolf, one double pink oleander; by Mrs. Groll, one double pink oleander; by Mrs. Hardenbrook, one double pink oleander and one wax begonia; by Mrs. Kauffman, four varieties of geraniums, one artillery plant, one English ivy; by Mrs. Hunt, one geranium, two varieties of coleus; by Mrs. Everett, two varieties of begonia, one urn of vines and mosses. There are many beautiful bouquets; the contributors' names we are not able to give.

J. L. WILLIAMS, *Chairman*.

The following contribution, prepared by Mrs. L. Everett, of Garnett, was read by Mr. Milliken, by request:

CULTURE AND BEAUTY OF ROSES.

A botanical classification of the rose is needless here, and I will simply use its garden classification:

First, those which bloom once in a season, as Hybrid China, Provence, Sweet Brier, most of the mosses, and all of the hardy climbers.

Second, the Hybrid Perpetuals, or Remontants. This class is of recent origin, and was obtained by hybridizing hardy roses with the ever-blooming varieties. This class does not give perfect satisfaction, or, at least, does not exactly suit me. They will bloom profusely but once in a season, yet they will well repay you in large, brilliant, magnificent flowers, for all they will cost. They are perfectly hardy, and require but little care.

Third, the Monthly or Ever-blooming class, which are distinguished from the preceding by their small, shining leaves and stems. This class of roses is divided into sub-classes, namely: the Noisette, Tea, Bengal, and Bourbon.

The Noisettes are of rapid growth, flowering in clusters. The Tea varieties are of delicate, slender growth; great delicacy of color, and rich tea fragrance, from which it derives its name. The Bengal class is not so numerous or varied in color. The Bourbon is a very extensive class; in some respects resembling the Hybrid Perpetual. All of this class are tender, and need protection in winter. The rose is easily cultivated, requiring a rich, clay soil, but will thrive in almost any soil, if given half a chance.

GENERAL TREATMENT.

The conditions most favorable for growing roses in pots, are good, rich soil, plenty of sunshine (the morning sun best), regular heat, and moderate moisture. Plants should be sprinkled often, to prevent the red spider, our most formidable foe. The leaves should be kept clean and bright, and if troubled with earth-worms, water the pots with weak lime-water.

For winter-blooming, grow the plants in small pots—just as small as you can keep them growing in. In September turn them out of the pot, shake gently, then repot, in a pot at least two sizes larger than the ones grown in, give a good watering, and shade a few days, and your work is done. Be careful and not water too much; let your pots get moderately dry, then give a good watering again. The rose is very sensitive to wet, sodden soil.

Plant some of all kinds, and you will be sure to be pleased with some, if not all. Be sure to have one Damask rose. Remember it was the one your grandmothers cultivated, and is much esteemed by all lovers of the beautiful. Plant you a climbing rose, that it may climb over your window, and waft its sweet perfume to your olfactory senses while you sleep. By all means plant some of the dear ever-blooming roses; they will give you a pleasure in the dark days of winter—a real feast for both heart and eye. Try them just once. If a lovely rose-bud or a fully-expanded rose on Christmas morn does not awaken a feeling of gratitude and praise in your heart, you must be less than human. I do not covet the casket that covers such a woe-begone soul. I am thankful I live in 1878, and not in 1778. Look at our advancement in the last fifteen years!

Rose culture is now reduced to a science. Every year our eyes are feasted on new productions. Rose culture and hybridizing roses are in their infancy. I do not believe that King Solomon, in all his gilded glory, ever had such beautiful ornaments as an eight-foot bed of ever-blooming roses.

When my time comes to bid farewell to this mundane sphere, I want some of my friends to bring roses—fresh roses, that I may inhale their rich perfume, the last thing in this world, that my departing spirit may be wafted on perfumed wings to that sun-bright clime.

"Bring flowers to crown the cup and lute,
Bring flowers—the bride is near;
Bring flowers to soothe the captive's cell;
Bring flowers to strew the bier."—*Tennyson*.

A vote of thanks was tendered Mrs. Everett.

A call for music was responded to by the choir; after which the following paper was read:

STORIES AND REMARKS ABOUT FLOWERS, AND CUSTOMS IN
DIFFERENT NATIONS.

BY G. Y. JOHNSON, LAWRENCE.

Man's first efforts seem to have been in the direction of something to eat, and for countless ages he lived by the chase, a nomadic wanderer. As he became more enlightened, or, as Darwinists would say, more highly developed, he tamed and tended herds, and from these he supplied his wants.

But in further periods of development we find him cultivating the land, and from cereals deriving all or a portion of his development. Still further along we find him planting vineyards, and from the product of the vine getting "*gloriously drunk!*" Ah! who can doubt that he was fast becoming civilized?

Long after the first date we have of any *written* history, we find him cultivating *flowers*; and from that day until this the degree of culture of either a nation or a family may be safely estimated from the degree of perfection attained in the cultivation of flowers. Babylon was at one time the center of learning and commerce, and during those days her hanging gardens flourished.

In the short time allotted to me I shall not attempt to go into details as to how and what to plant, but will refer you to almost any horticultural journal; but will give something of the general effects of flowers upon individuals, tell of a few novelties and strange customs of different nations, and leave the subject with you to pursue further if you deem it of sufficient interest.

Why is it that some plants will flourish in certain localities and not in others which to all appearances are the same? Why that the common plantain should follow in the footsteps of the white man until even the Indians should give it the name of the "white man's foot?" Why is it that the trailing arbutus grows upon grayelly knolls by the wayside, or by the edge of bogs and in the shade of the woods, that in many places, though transplanted with care and tenderly nursed, cannot be made to live; and yet the "cardinal flower," always found standing alone and by the water, can be transplanted into gardens and bloom profusely, as though nothing unusual had occurred to it? Why should the grapevine cling with tendrils and climb, while the ivy must throw out rootlets to fasten itself to the object it means to scale? Why should the honeysuckle twine one way and the bean the other? and either will sway about in the wind, or sprawl out upon the ground, rather than twine in any other direction. Why is it that the portulaccas flame out in full bloom for the sunshine, while the primrose only opens its brightness to the blindness of darkness? Why is it that the night-blooming jessamine should keep its flowers folded during the day without the least hint of sweetness, yet at nightfall its little candle-like flowers should expand and seem lighted, and from it is thrown off a fragrance as rich as an orange

bloom? Why is it that some plants grow up in a single night, flower and seed in a day and perish at evening, while others wait for fifty or one hundred years to bloom?

Ah! yes, who can tell? It is begging the question to say, it is their nature. How came it their nature? By whom was this variety planned? For what purpose? Who will answer?

To the cultured mind, flowers are ever welcome, and they seem appropriate to all incidents of life. As ornaments they are fastened to the clothing of the infant, and form most attractive playthings in childhood. They wreath the brow of the bride, and cheer many an hour that would otherwise be lonely. They deck the table of feasting, when gathered with their friends in after-years; and who can estimate the pleasure both to giver and receiver of bouquets? Old age deigns to decorate itself with them, and finds consolation in their company; and what is more appropriate at the tomb than the wreath and offering of flowers from the hands of love?—or what can be more expressive of deep affection than the planting and caring for the white rose above the head of those sleeping the sleep that knows no waking?

Even to the half-civilized classes, flowers have charms that take the forms of strange customs and mystic rites. The Persians have a beautiful custom of holding a yearly festival, called the "Feast of Roses," which takes place during the month of June or July. During this feast they live in tents, and each wears his or her most beautiful clothing—and as these people love bright colors, their attire must indeed be a gay one. Everything betokens mirth. Why should they not, when surrounded, served, crowned and decorated with the Queen of Flowers? Musical instruments are heard from morning till night, and the story tellers relate their most captivating and pleasing tales. Dancing girls dance for hours at a time, and at night, when the silver rays of the moon cover everything as with the sheen of glory, the people recline upon their beds of carpet, and fall asleep, lulled by the serenade of lutes and the song of the nightingales.

What a romance could be written of the old rose tree of Germany! that is known to be over eight hundred years old. Generation after generation of men has arisen and passed away. Nations are born and die, but this old Methusaleh among flowers passes along on the even tenor of its way, and yields its annual profusion of roses. We had supposed the Black Hamburg grape vine in the suburbs of London, bearing its forty tons of grapes annually, with its four hundred years, was a plant to be esteemed of a respectable age, being contemporaneous with Christopher Columbus; but it becomes an infant, compared with the plant that furnished the rose for the button-hole bouquet of William of Normandy before he set sail on his conquest of England. The order of Knights Templar claim to be ancient, yet here is a plant nearly one hundred years old at the institution of that order (1118), and perhaps furnished the rose upon which they pledged secrecy. It was two hundred and fifty years old when the English Parliament became a regular

organization (1293), or the mariner's compass was invented (1303), or coal was first used as a fuel (1307), or when the monk had invented gunpowder (1330). The house of Stuart esteems itself of antiquity, yet this plant was three hundred and fifty years old when the first Stuart reigned over England (1371). Newspaper men, from their talk, you would suppose had a representative local editor at the first homicide, and accurately published details, under heavy head-lines of sensational trash; yet this plant was nearly four hundred years old when John Gutenberg of Germany first invented printing (1440), or the first book (the Bible) was printed (1462). Almost another quarter of a century had been added to its juvenile years when America was discovered. Some persons delight to trace their genealogy back to the real blue-blood of the Puritans, and love to tell that their forefather was one of the forty-one men who signed an agreement to support such laws as might, from time to time, be enacted (1620)—only two hundred and fifty years ago; and others parade the fact that their mothers were sold for tobacco, by claiming to be lineal descendants of the "first families of Virginia" (1607). Yet here is an oriental plant, transplanted into Germany five hundred and fifty years before, and has (oh, what a glorious record!) yearly fulfilled the design of its creation, and, without ostentation, scattered roses about its abiding-place. Eight times as old as our republic, yet this rose puts on no airs, nor claims ancient aristocracy.

Who says the tracing of the lives of individual specimens of flowering plants is not of interest?

Again: Carefully study the formation and habits of the rose of Jericho, which the Arabs call a symbol of the resurrection. It flourishes upon the sands of Sahara, and when the dry season comes it withers, folds its leaves and its roots, and the winds of the desert carry it along until it finds a moist locality; then it takes root, its leaves become green, and its flowers, of a delicate pink color, open. How many of *us* make the most of *our* opportunities, and adapt ourselves to surrounding circumstances, as does this rose?

In the interior of South America there grows a vine whose seeds are carried by the birds, and when dropped in open ground it accepts the situation, and establishes itself in a shrub-like form, and seems entirely innocent of destructive design toward others. Plant it by a stone wall, and it becomes a straggling, sprawling plant, and apparently harmless; but as time rolls on it will be found that the wall crumbles and falls in ruins, and, upon close examination, it will be found that the roots have enlarged and multiplied until every nook and crevice and seam of mortar is permeated, and the stones heaved up and loosened. But let it be dropped by a tree, it springs up a slender, puny thing, like the commencement of evil habits, and gradually ascends the tree until it becomes stronger and stronger, and finally envelops the whole body and limbs. Then it shows its true character, and seems to take hold with ungrateful hands the power that raised and is supporting it, and kills first the limbs and last the body, and clings to it still,

gloating over its victim until decay prostrates the noble tree, and the murderer perishes with the downfall of its victim. In rich land, where it can get hold of nothing, it grows upright, and plants spring up from its own roots, twine around the parent stalk and destroy it, so strong seems its murderous tendency. This plant is very appropriately named "the strangler." Think you there is not deep interest in studying the *habits* of plants?

More than 1800 years ago the Romans had a custom of suspending a rose over their banqueting tables on all occasions when a number of friends met and dined together, and with the rose was suspended the Latin words "*Sub rosa*," meaning *under the rose*. The white rose was the symbol of silence, and everything said there between friends was to remain a secret. If such a custom were in vogue to-day in *Christian lands* at "tea-table toasts," what heart-burnings and neighborhood quarrels might be avoided; or better still, if the "*sub rosa*" meant, to say no ill of another. Ah! if to speak is to say evil of others, then indeed is "silence golden."

The study of the names of flowers, and how they were given, is one of peculiar interest. Take as a single instance that of the young man walking by the sea, and with him his betrothed. Spying a flower in the water, he rushed in to obtain it for his beloved, but got beyond his depth, and as the tide bore him out to sea and to death, by almost superhuman effort he threw the flower to her very feet, and cried, "*Forget me not!*" What a christening! And from that day to this, this pale blue flower has borne as a name the words spoken by that young man's dying lips.

But time fails me to enumerate the many interesting stories in this line, and I can do no better than to refer those whom these few words have interested to proceed with the inquiry, and treasure up these legends and stories for themselves.

If Jesus of Nazareth could, in his day, say of so plain a flower as the lily of the valley, "Behold the lilies of the field: they toil not, neither do they spin, yet Solomon in all his glory was not arrayed like one of these," what must he have said of our Golden, Japan, or even our common tiger lilies? In my opinion, if Solomon's kingly robes were no more gorgeous than *that*, he was clad as plainly as any George Fox Quaker could desire. Perhaps he meant to infer that *God* clothed even the lily, while He left poor Solomon to furnish his own clothes.

If grass is to a front yard what a carpet is to a parlor, then flowers are to the door-yard what trimmings are to a lady's clothes, and need fully as much taste and judgment in arranging. I have seen both badly overdone. The home surroundings need to be so arranged that nothing will look "loud," but completely harmonize, and make the passer-by involuntarily exclaim, "Home, sweet home!" A large red ornament on the hat of a blonde would look about as well as a large red poppy would appear as a pot plant on the front "porch."

PLANT FLOWERS. They will endear your home to your children, draw

them towards the parental roof in after-years, and their remembrance will guard their feet through many slippery paths. I knew a lady once who cared very little for such ornaments. Her children grew up to be six to ten years old. She had a sister that was a passionate lover of flowers, whom she often visited with her children. On their return home from one of these visits in flower-time, (her sister's door-yard being one sweet, harmonious profusion of bloom and foliage,) the children went into their own bare yard, the finest ornaments therein being one hundred young chickens and a dozen young pigs. They looked sorrowfully around, and exclaimed, "*Our yard is not one bit nice, like Aunt Martha's. Wish we could have some flowers, so our home would look pleasant, like other people's!*" That mother told me that had a knife been thrust to her heart, the pain could have been no more severe than she felt at that moment, and "I wish our home could look pleasant, like other people's," sounded in her ears in day-time and haunted her sleep like a nightmare, until she resolved that another season should not pass over her head without her door-yard having more attractive ornaments than chickens and pigs. The next spring the coops were moved to the far part of the back yard, and flower beds made, the children joyfully lending a helping hand, and each new day brought new joys. When returning from visiting, the children no longer *droned* into the yard, but rushed in eagerly, to see what changes the flowers had made in their absence; and though this has been almost a score of years ago, this lady's door-yard has its well-kept flower beds; and though the children are grown and since gone away, yet their pleasantest recollections are of home.

Mothers! Nine-tenths of the inmates of prisons were reared in homes where no flowers were cultivated — no honeysuckle over the window, trained by loving hands; and who can tell how many of these might to-day be leading honest, honored and noble lives, had they only had a home in childhood — "*nice and pleasant, like other people's.*" To me it seems impossible for a child to grow up in a "vine-clad cottage," in a well-appointed yard of well-kept, judiciously-selected flowers, blooming in sweet profusion, and then *develop into a criminal*; but that he would grow up with such a true veneration for the beautiful that rascality would be absolutely disgusting, and he would sacrifice everything before he would sacrifice his honor and moral rectitude — hence it pays to cultivate the beautiful, as an aid to morality.

Who will take the responsibility of leaving their homes unadorned with these cheap beauties, and have nothing but the four bare walls of stone or unpainted boards, the chief ornament of the side yard the pig-sty, and of the front yard the chicken-coop? where the son or daughter is ashamed to invite their friends, and hate their home, and wish to be elsewhere, because their own home "*does not look nice, like other people's?*" Will you take the risk of the future welfare of your children, when such recollections are all that cluster around that sacred word, *home*? Do you yearn for that kind of respect engendered by such surroundings? When done grasping for money

or property, and your hearts yearn for your children's love and respect, think you children with such recollections of the miseries of childhood will tenderly and lovingly strew with flowers of affection your road to the brink of the dark river?

That children *do* sometimes become trustworthy, faithful and true citizens, who have been "*dragged up*" (I will not say brought up) in such homes, is to me the strongest argument that can be produced against the doctrine of total depravity. It is the men and women whose home recollections are sweet—who can tell of the honeysuckle over the porch; of the pinks and touch-me-nots in the garden; of the rose of Sharon and hollyhocks in the side yard; of the beds of phlox and sweet-william in the front; the morning glories over the window; of the spruce or pine tree on the lawn; of the "sweet-apple tree," "the like of whose fruit he has never since seen;" of the gingerbread that mother made, which has never been equaled—such are the homes from which grow up the men and women who make smooth the way of aged parents to rest; who speak of them as with a reverence almost equal to that towards their God; and it is of such parents it was long since written, "Ye shall be gathered to your fathers in peace; ye shall be buried in a good old age." To such, the relationship of parent and child is blessed. "Provoke not your children" is as much a command as "Honor thy father and mother."

I know of no better way to bring this medley to a close than to relate what to me is a most beautiful legend, which links together a singular *flower custom*, a faithfulness to believed duty, and the strength of parental love. Many years before the white man ever trod this continent, the Indian nations surrounding Niagara assembled, once each year, at the falls, and offered a tribute of flowers to the "Great Spirit of the Falls," and sent it by the hands of the fairest maiden, just arrived at womanhood, to be found in all the tribes. It was esteemed a great honor by the tribe to whose lot it fell to make the sacrifice, and even the doomed maiden deemed it a high compliment to be selected to guide the "white canoe," made so by *flowers*, over the cataract. The only daughter of a Seneca chief was once chosen to guide the offering to the "Great Spirit." Her mother had been long before slain by a hostile tribe. Her father was bravest among his warriors, and the stern expression of his brow never relaxed except to his beautiful daughter, the only joy to which on earth he clung. No symptom of feeling was manifest upon his countenance when his lovely and beloved daughter was selected. No tear trembled in his eagle eye as the preparations went forward for the sacrifice, which to him was giving his all. The day arrived; everything is made ready. The night came on; the savage festivities proceeded. The moon arose and beautified the cloud of mist arising from the falls, ascending as a perpetual incense to the great Creator of wonders. And as the moon mounted high, and glorified all the landscape, and made it look like fairy-land, the "white canoe," gayly decorated with white flowers, and laden with its pre-

cious freight, glided into the stream, from which escape is hopeless. The willing sacrifice, the beautiful maiden, calmly steers her tiny craft to the center of the stream, while shouts and savage yells arise from her companions on the shores. She has turned her back upon the world, and joyfully and serenely turns her face toward the front, intent only upon carrying to the Great Spirit her floral offering. Suddenly another white canoe, laden and decorated with flowers, shot from the bank, and, under the impetus given by the powerful Seneca chief, it flew like an arrow to destruction. It overtook the first. The eyes of father and child met in one last gaze of love. The cataract is reached. For one moment the barks tremble upon the curve of the falls, and then, a double sacrifice of lives and tribute of flowers, they plunge together over the cataract into eternity, to be in the happy hunting-grounds never separated.

So may we all live and develop, among fair flowers, into adoration of that "Great Spirit" which these poor savages ignorantly worshiped, that when the sacrifice is called for, like this Seneca maiden we may joyfully decorate ourselves with flowers, and gladly be wafted over the abyss separating us from the gardens of the Eternal, where the trees are continually in bloom, and the flowers of good works here bear glorious fruit in immortality.

FINAL RESOLUTIONS.

The Committee on Final Resolutions reported the following:

Resolved, That the members of the Kansas State Horticultural Society do hereby express their earnest and sincere thanks to the citizens of Garnett, for the courteous and generous manner in which they have been entertained during the session of the Society about closing.

Resolved, That we hereby tender our thanks to A. A. Adams for the efforts he has put forth in providing for the comfort of the members of this Society during their brief stay, and for his efforts in making the meeting a success.

Resolved, That our special thanks are tendered to Miss Voorhees, Mrs. Mundell, Mrs. Kauffman, Miss Turrell, Misses Selby, Miss Vines, Miss Sewell, Mrs. Poplin, Miss Lizzie Osborn, Miss Spradlin, Miss Ollie Osborn, Miss Lafferty, Messrs. DeWolf, Bailey, Barrett and Voorhees, who so kindly enlivened our meetings with music.

Resolved, That our special thanks are hereby tendered to the members of the Garnett Silver Cornet Band, for the music furnished by them each day of our meeting.

Resolved, That our thanks are hereby tendered to the M. K. & T., A. T. & S. F., K. P., M. R. Ft. S. & G., and L. L. & G. Railways, for their liberal reduction of fare to persons attending this meeting.

Resolved, That the Secretary of this Society be instructed to publish the foregoing resolutions in the Garnett *Plaindealer*, and to furnish a copy to the general offices of the respective railroad companies here named.

On motion, the Eighth Semi-Annual Meeting closed its session.

PROCEEDINGS
OF THE
TWELFTH ANNUAL MEETING,
HELD AT OTTAWA, KANSAS,
On December 3d, 4th and 5th, 1878.

On call of the President, the Society convened at the city of Ottawa, on Tuesday, December 3d, 1878, and opened its twelfth annual session in the Christian church.

The meeting was called to order by President Prof. E. Gale, at 2 o'clock P. M. Prayer was offered by Rev. D. S. Altman, of Ottawa.

The following committees were announced by the President:

On Arrangements—H. P. Welsh, Ottawa; E. J. Nugent, Ottawa; N. P. Deming, Lawrence.

On Membership—F. Wellhouse, Leavenworth; C. H. Graham, Leroy; W. E. Barnes, Vinland; W. E. Robson, Cheever; L. A. Walker, Independence.

On motion, the subject of orchard culture was taken up, and, as a leader, the following report of the standing committee having charge of the same during the year was called for, and read:

REPORT OF STANDING COMMITTEE ON ORCHARD CULTURE.

BY E. WELLHOUSE, LEAVENWORTH.

It is estimated by careful observers that nineteen-twentieths of all the fruit trees planted in the State die or are killed before they come into bearing, and some put the percentage of loss even higher than this.

[On motion of Col. Waugh, the following amendment was substituted for the above paragraph:

It is estimated by very careful observers that nineteen-twentieths of all kinds of fruit trees planted in this State die or are killed through the negligence of planters. There are many who place the percentage even higher. While this is true of the general planting, it is equally true that those who have paid strict attention to the culture and protection of their fruit trees have been remarkably successful, not losing, from all causes, more than one per cent.]

If these estimates are correct, it indicates a fearful loss, and the questions arise, Are these losses unavoidable? Are we to plant trees only to have them destroyed? Your committee think not, and we have deemed it best to devote our time to an investigation of the causes of these failures; to point out the breakers upon which so many orchards have been wrecked, and see if it is not possible to lessen this terrible destruction.

The first great loss is sustained by transplanting—in moving the trees from the nursery to the orchard. In taking up trees, all the long fibrous roots are cut off, and oftentimes the trees are moved long distances, and are exposed to sun, wind and frost, until it is a wonder there is any vitality left. In setting them in the orchard, some are set too deep, and are put into holes that hold water for weeks at a time during wet weather; then care enough is not taken in packing well-pulverized earth around the roots.

We have been setting out trees the last three years in the following manner, with good success:

1st. Take a good, steady team, with a twelve-inch plow, and mark out east and west where the tree rows are to stand; then mark out north and south as follows: Set the stakes one foot east or west of where the trees are to stand; run a furrow through by the stakes; then return, letting the rear horse walk in the furrow, running the back-furrow one foot from the other; set the plow as deep as the team can stand; then go one round more, and throw out the middle. A straight furrow can be thus thrown out ten to twelve inches deep and eighteen inches wide. Now hitch your team to the wagon, fill in plenty of wet straw or hay, and drive to the nearest reliable nursery, and as fast as the trees are taken up, pack them into the wagon with plenty of the wet straw packed around the roots. Drive home and on to the intended orchard ground, and as fast as the trees are taken out of the wagon set them out in the furrows where they cross each other. A digger should be run under the trees in the nursery about the same depth as the furrows. After the trees are set out, hitch the team again to the plow and throw the furrows back, and as the trees are cultivated during the summer, keep throwing the soil to the trees, until by fall there is a ridge in the tree-row.

2d. We occasionally have dry seasons that are very destructive to newly-planted trees. The remedies for this are, clean and thorough culture, mulching, and irrigation.

3d. Many orchards are seriously injured by growing small grains in them the first four or five years. Your committee consider corn the best crop to grow in a young orchard. It gives thorough culture, and protects the trees from the winds a large portion of the year.

4th. Thousands of trees are injured on the southwest side and many are killed by the trees leaning to the northeast, thereby leaving the bodies exposed to the destructive rays of the mid-day sun. We have seen orchards with nearly every tree leaning to the northeast, and the branches leaning still further, caused by the prevailing southwest winds during the summer, while

the trees are making a rapid growth. Trees that are leaning thus, can be straightened up by digging under the roots on the southwest side, then pushing the tree up to its place, and tramping the earth firmly around it again. In this way, large trees have been straightened up. But we prefer to have the tree grow upright from planting; and to do this, make low heads, so that the leaves will shade all parts of the body. We do not think it possible to raise a good, healthy tree, in this climate, with the body exposed to the hot rays of our scorching noon-day sun; and in shaping up the head of the tree, care should always be taken to cover all parts of the body, and limbs as well, with foliage.

5th. More orchard and nursery trees have been destroyed by rabbits than by any other cause. Your committee has suffered more from the depredations of this little pest than from all other causes. They have an irrepressible habit of gnawing, and young trees seem to afford them splendid opportunities to cultivate this habit. Rabbits and fruit trees cannot grow and flourish together, and an exterminating war on the rabbits is our motto. Two years ago we made up our minds that if we did not destroy the rabbits, the rabbits would destroy us; so we went to work with a will, and made about five hundred traps, and put them at regular distances over a 120-acre field, and up to this time we have caught over eight hundred rabbits; and in the meantime, not a tree has been hurt by their pestersome teeth. The rabbits sold at seven cents each, the money is in our pocket, and there is not a rabbit on our grounds to disturb our pleasant dreams. We use a small box trap, two feet long, four by six inches inside, with a sliding door in one end, and no bait is used. Since we made these traps, we have not wrapped a single tree, and we have not had one mill's worth of damage done.

6th. The next great pest is the round-headed borer, and it is claimed by some that more trees are destroyed by this enemy than by rabbits, or by any other one cause. Certain it is that no orchard, to our knowledge, has escaped its ravages, and where neglected, whole orchards have been utterly destroyed by this silent and insidious foe. Many kinds of washes have been recommended to prevent the parent from depositing her eggs, but exterminating war with the knife is the surest and safest way to get rid of this deadly enemy to orchards. Woodpeckers are valuable assistants in clearing trees of borers of all kinds. Flat-headed borers do serious damage some seasons, especially when the tree is debilitated or injured.

7th. Blight is another monster that rears its ghastly head to frighten men from planting trees. Pear trees have suffered most from the attacks of this destructive foe. Whole orchards of pear trees have been killed to the ground in a single season; in fact, for a time it looked as if every pear tree in the State would fall a victim to its ravages; but we are happy in being able to say, that for the last two or three years we have been relieved from its deathly grasp.

Another serious drawback to orchard culture in this State is the lack of

good fences around our orchards. No trees can flourish where stock is constantly breaking in. Sheep are exceedingly destructive, and if allowed to run in the orchard will bark the trees as readily as rabbits; and cattle display great skill in twisting off the tops of our finest young trees with their horns.

The caterpillar is another enemy that needs our attention. The tree caterpillar has done but little damage the last few years. There is, however, another caterpillar that makes its appearance in July and August, that is doing considerable damage by defoliating the trees, with the name and habits of which your committee is not familiar.

Sudden and excessive changes of temperature also do very great damage at times. Peach orchards suffer most from this cause.

[On motion of Col. Waugh, the following amendment was substituted for the foregoing paragraph :

Another good practice is to plant trees close together north and south, thereby shading the bodies of each other. This practice of close planting aids materially in other directions. It prevents, to a very great extent, the destructive effects of our sudden and excessive changes in temperature, which heretofore and still are a source of serious damage to our trees. Peach orchards suffer most from this latter cause.]

We have not brought forward this frightful array of enemies to alarm and prevent farmers from planting trees, but rather to warn them that when the trees are planted their work and watchfulness have just commenced; to warn them that intelligence, care and constant attention are necessary to insure success, and that eternal vigilance is the price of an orchard.

DISCUSSION ON THE REPORT.

H. E. VAN DEMAN, Geneva: The barrel trap recommended at the last annual meeting, held at Parsons—a description and cut found on page 112, Kansas Horticultural Report for 1877—has proven a successful one, and, with proper attention, most any orchard and nursery can be protected by the use of a few of them. The worm alluded to in the report is probably the fall web worm.

F. WELLHOUSE: They form a web similar to the common tent caterpillar, and are quite common on hedges, as well as trees. I put a glove on my hand, and mash them, as the easiest and surest way of destroying them. I do not like the barrel trap recommended at our last meeting, for the reason that, being placed in the ground, they soon rot. They are successful, unquestionably, as long as they last. I prefer a box trap, and above ground.

H. KELSEY, Ottawa: Low heads are very good to protect the bodies of trees from *sun-scald*, but I prefer to plant near the tree, on the south side, a thrifty raspberry bush, which affords all the shade needed, and also a crop of berries. Some varieties of trees seem to be preferred by the *borer*. I find the Missouri Pippin more liable to their attacks than many other varieties. In hunting this insect, remove the dirt from around the collar, and insert a small wire, and draw them out of their burrow. Some say that thrusting the wire through them is enough. I am not so easily satisfied. I want to see my

game, and then I am sure it is dead. It is of no use to hunt in the small, round holes, found cut through the bark, for that is the opening through which the matured insect has escaped. All wounds made upon a tree should be coated with wax, to prevent rot.

W. E. BARNES, Vinland: Will Mr. Wellhouse please state what per cent. he has lost in planting, as I understand he has planted some 30,000 apple trees during the past few years?

F. WELLHOUSE: About one per cent. The past few years have been very favorable for such work.

L. A. WALKER, Independence: The per cent. of losses assumed in the report I believe to be correct. It impressed me at first as being too large, but from a review of many cases of orchard planting coming under my observation, and even including my first efforts, I must concur in the estimate. Prairie fires, insects, and a general neglect, are the causes of such a heavy loss. It teaches the lesson not to undertake more than we can properly take care of.

A. A. ADAMS, Garnett: In 1864 I planted 500 apple trees, and 490 of them are now bearing. In 1865, 1,000 trees were planted, and at this date 980 are in good condition. All my losses have been caused by borers. My pear orchard of 150 trees has been reduced to 92 healthy trees at this time. I never cultivate. They are healthy and fruitful; are standards. Dwarfs have failed. I protect my trees from attacks of rabbits by the use of arsenic, on slices of apple, placed on the ends of short stakes driven into the ground, with the arsenic-side down. Strychnine is bitter, and they will not touch anything having it on.

DR. B. M. CRUST, Stanley: There is no need of any serious losses in tree-planting. In 1855 I planted 600 apple trees; losses from all causes are about one per cent. Pears—Our climate does not suit this variety of tree. The flavor is as fine as can be desired, but the trouble is with the tree. If some one would devote time to producing new seedlings of value in tree and fruit, which would adapt themselves to our climate, he would confer a great blessing upon our State.

H. PERLEY, Spring Hill: If, as appears from the statements, losses are the result of negligence, they are no discredit to our State as a fruit-producing section. A neighbor of mine planted one hundred apple trees, and lost them. Not discouraged, he tried another hundred, and this lot also failed. But he found out the cause—it was the flat-headed borer. I have planted orchards in several other States, and can indorse the statement that trees succeed as well in Kansas as elsewhere. Borers—From my experience with this enemy, ashes around the trees will not prevent their attacks. I have wrapped the bodies of my trees from the ground up one and one-half feet, and still this insect will go above the wrapping and place its eggs. Their prevalence is due much to surroundings. Neglected orchards in a community become breeding-dens of this insect, as well as a host of others,

and the industrious and careful orchardist suffers from such negligence. I have not lost more than one per cent. of my planting, and it is chargeable to me and not to the country.

DR. J. M. DEBALL, Fontana: I believe the per cent. of losses reported by our committee to be about correct, and the fault lies with the owners of the orchards. I came to Kansas to grow an orchard, and planted 1,200 apple trees, brought from Illinois. By grasshoppers and other causes, I have lost 800 of that lot. I then planted another orchard of about twenty-five acres, of Kansas-grown trees, and my loss in these is about one per cent. I have never discovered a borer in these trees. Wrap the trees with tarred paper, to keep off rabbits and borers.

The Committee on Arrangements announced the following:

Morning sessions will open at 9 o'clock, and close at 12 o'clock; afternoon sessions open at 2 o'clock, and close at 4:30 o'clock; evening sessions open at 7 o'clock, and close at 10 o'clock.

Programme for evening session: First, music; address of welcome; response; annual address of President.

The meeting then adjourned.

TUESDAY EVENING.

President Gale called the meeting to order at 7 o'clock.

Exercises opened with music, followed by an

ADDRESS OF WELCOME,

BY A. W. BENSON, MAYOR OF OTTAWA.

Mr. President, and Members of the State Horticultural Society: I am here to perform a grateful task—a very pleasing duty. I am to express to you individually, and to your Society, the cordial welcome of our citizens. We recognize in your Society one of the foremost, beneficent and living forces of the commonwealth. On the fruitful hillsides and in the fertile valleys of our State, under your fostering care, is being rapidly developed an industry that contributes vastly and directly to the happiness and well-being of our people. The toothsome products of horticulture, under the genial influence of Kansas sunshine, supplemented by intelligent husbandry, yield here their richest treasures. The beauty, the comfort and the happiness of home are directly promoted by the practice of your art; while in the matter of material growth and prosperity, the industry represented by your intelligent body contributes immensely to the State. Ours is a land of cattle and of corn, 'tis said—some say a land of "hog and hominy;" but it is more: it is a land of golden fruits and bursting vintage—the home of the blushing apple and the luxuriant vine. In this diversity of production consists one of the chief elements of Kansas growth and greatness, luring thousands upon thousands to this

avored heart of the continent. At such a time as this, when every incoming railway train is burdened with great swarms of home-seekers, and our highways are white with the canvas-covered wagons of the immigrant, it is well that you, the representatives of a great and growing industry, should meet and plan to extend the reach of practical knowledge, and exchange the results of experience. Every active association, representing any live industry, should be alert to the marvelous possibilities of this present time. Let the strangers flocking to our gates have the *facts*—let the truth be known—let the light shine! We of Kansas have no fear of facts. Immense mischief has been worked in the past by outrageous falsifying; the truth never harmed us. Suppose we invoke the scriptural test of the genuine, and ask to be judged by our fruits; and as this is an assembly of fruit growers, I am sure you would be willing to have that test applied, even in a literal sense. Are we not willing to be judged by our fruits! Who can regard the glorious tints and delectable juices of our Kansas apples, or revel in the delicious flavors of a Kansas peach, and then prefer to be measured by any other standard?

As loyal Kansans we all glory in our past pomological triumphs. The just fame of our fruits has been widely heralded abroad. But this is not the most significant fact; the more encouraging thing, after all, is that we have only just begun. A golden future has in reserve for us still higher successes. The day will speedily dawn when to the sunny slopes of Kansas the whole country will look for the choicest specimens, as for the most generous yield of fruits, common to our climate. Then it will not be drouthy Kansas, but fruitful Kansas; not the home of the coyote, but the land of the grape; not treeless plains, but countless orchards. These, good friends, are only faint glimpses into a near future.

Need I assure you again that we are glad to meet you here? Ottawa, holding happy remembrance of the third annual meeting of your Society, held here, will remember this, the twelfth annual session, among her best and brightest honors. For the few days that you will remain the guests of our citizens, I hope and predict that you will be kindly and hospitably entertained; that you will really be made to feel "at home" here. I confidently believe that you will not find, while here, that—

"Hearts, like apples, are hard and sour"

—at least not *our* hearts nor *your* apples. In the name, then, of the citizens of Ottawa, for whom I am permitted to speak, I welcome you to their homes, to the comfort of their firesides, to the good cheer of their tables. May you *do* good and *get* good, and may you each realize what I have so feebly expressed—a hearty welcome.

This address was responded to by A. A. Adams, of Garnett. Mr. Adams's remarks will be found on the next page.

RESPONSE TO ADDRESS OF WELCOME.

Ladies and Gentlemen of Ottawa: Words would fail us in an attempt to express to you our feelings of gratitude for the kind and impressive welcome you have extended to us, through the able address we have just listened to, by the Mayor of your city. In behalf of the Society you have so cordially welcomed to the hospitality of your beautiful city and the pleasant associations of your homes, permit me to assure you that we fully appreciate such manifestations of kindness, and respond with sincere thanks. To some extent we meet to-night as strangers; but the welcome given us dispels that thought, and unites us all in the work for which we are assembled by a common sympathy and fraternal relations.

We are confident that a mutual benefit will result from our sessions among you, and should the horticultural work in your county become stimulated, and new life infused into your people, we shall feel that our object in calling this meeting here at Ottawa has in part been attained. We expect to profit materially by the light we receive from you, and at the same time hope to impart some knowledge which will aid you in beautifying your homes, in the management of your orchards and fruit grounds, and which will result in filling your store-houses with luscious and health-giving fruits, thereby increasing your happiness and usefulness. Some of the members of our Society are veterans in horticulture, having engaged in this pursuit at a period prior to their work in Kansas, and have devoted their time to its development in this State from its first settlement; and it is with pride that to-day they can look over the vast horticultural development in this State, and feel that it has at so early a day been placed on an equality with many of the most favored fruit sections in the Union.

Our people, in the struggle, have met with many difficulties, arising mainly from ignorance of the conditions of climate—many of which have been mastered, yet others remain more difficult to solve. These will require a strong and united effort; and to secure the fullest coöperation of intelligence, our meetings are held in various portions of our State, to strengthen our work. To this end are we here assembled, and again would we repeat our expressions of gratitude for the earnest and hearty welcome you have given us on this occasion.

PRESIDENT'S ANNUAL ADDRESS.

BY PROF. E. GALE, MANHATTAN.

Ladies and Gentlemen of the State Horticultural Society, and Citizens of Ottawa: After eight years of care and work and change, we meet for the second time as a society, to transact the regular business of our annual session, in this beautiful city of Ottawa. We would gratefully remember the Giver of all good as we review the unnumbered blessings of these eight years. These years have given us some lessons of experience. Some bright anticipations once cherished have come to naught; and again, some things that we

were then sure could not be realized, have been more than attained. Not a little light has been thrown upon the difficult problems that relate to fruit, forest and garden culture, in our changeable and peculiar climate. If experience with us has proved a dear school, it has been none the less valuable to the State. As a society, if we have learned anything, it has all been used in the interest of the people of Kansas; and we have the proud consciousness of giving back to the material interests of the State many fold for all that we have ever received of her bounty. We are workers in the interest of horticulture, not for State aid or by reason of State aid, but because a love for these pursuits is implanted in men's nature. We shall just as surely work on in the way of experiment, and just as certainly gather fresh lessons of experience, whatever may be the attitude of the State towards us, as that the seasons roll on. It may be a weakness, there may be a little of one-ideaism in it, but we cannot let tree and fruit culture alone. If you move us out on to the driest ridge of the "Great American Desert," we should all be studying on planting trees and gathering fruit, and making a wind-break for our families and our stock. We are to remember that this Society does not make horticulturists, but horticulturists make the Society. Probably nine-tenths of our membership would be as enthusiastic in our legitimate pursuits, if no Society existed. And while we would not ignore the fact that we personally owe much to association, it is important for us to remember that successful horticulture does not depend upon State patronage. But while we are not indebted to the State in this regard, it is well for us to keep in mind the fact that the State can make, if it only so will, important and profitable use of our experience. Experiment and experience have been individual in the past, and must be in the future; and it will be the office of this Society to combine or unify the experience of individuals, and make it the property of the State. In this direction the Kansas State Horticultural Society has been eminently successful. While, then, we ask for State aid, it is simply to secure for the State that knowledge which otherwise would be confined to the few. When we send up to Topeka a request for a small contribution from the State treasury, let us feel, and let our legislators understand, that we ask it not in our own interest, but in the interest of the entire State. I wish to call the attention of this Society to the importance of making provision for paying the traveling expenses of at least one delegate to our annual meetings from each of the county societies of the State.

The field opened before the horticulturist is one well calculated to arouse all his enthusiasm. He deals, it is true, with the lowest form of life; but it is life veiled in impenetrable mystery. We may not be able to raise the veil and tell what that life is; but this we know, that we deal with living things. Yes, we hold in our hand a link of the chain that reaches up to the being of God. If we are unable to tell what that life is, this we know, that all our interest in any plant grows out of its life. We take a seed in our hand, and all the interest which we feel in that seed grows out of the fact that there is

wrapped up in its protecting integuments an organized and living existence. It is now a germinal existence, just sleeping in the little protecting cradle which nature has given it, but it has before it a wonderful future. And we may well ask, what is it to be? The lump of clay or the fragment of rock only tell in themselves of a changeless future, but in this seed there is the promise of a succession of wonders that may reach to the end of time. But the future of this seed depends not simply upon its inherent nature, but also upon its surroundings; and these surroundings are variable elements that enter always into the problem of the future of this seed. What seemed at first, then, a very simple problem, becomes in practice one of the most complicated and difficult to solve. There are contingencies growing out of the nature and condition of the soil; and to these contingencies are to be added those that grow out of the mean and extremes of temperature and of moisture; and to these, also, the effects of atmospheric motion, of altitude, and the possibilities of disease. These elements in the great problem of vegetable life always hold a variable relation to each other; but probably in no part of the American continent are these relations more variable than in Kansas and adjacent regions; hence, all horticultural pursuits will here involve a degree of care and the study of meteorological laws that will scarcely be required elsewhere. We very soon learned that the rules of successful horticulture as held in the Eastern States, and especially in Europe, would only lead us astray if applied on a Kansas soil; but it has not been so easy to learn what rules may be relied upon here. The horticulturists of Kansas are very nearly weaned from the notion of going to Europe for instruction in their occupation, and most of us are ready to settle down to work out the problems proposed for ourselves on our own soil and in our own way. From the very nature of the case we must do this work for ourselves, and upon our own soil. There are some questions to be answered which can be answered only by actual trial on the great Western plains. All the experience of Europe on these questions will be of little avail here. This is eminently true of the western half of the State. While our attention as a society has been largely called to the eastern part of the State, it is evident that the western portion is now to demand more consideration. Western Kansas has received an immense population within the past season, and it is probable that tens of thousands more will locate in the western counties before next June. Under even ordinary circumstances, we should give special attention to this vast incoming population; but in view of the very peculiar features of the climate, we need to consider their wants more carefully. Some means should be devised to determine at the earliest possible date what can and what cannot be done horticulturally in western Kansas. It is the great question for the people of this region. What can be done in the way of forestry and fruit culture? To what extent can we make both a success? As we move up the incline toward the Rocky Mountains, we shall reach a point at last where the peach can be no longer relied upon, and where the apple crop will be more

uncertain. As we move westward the question of forestry becomes more important, and at the same time more complicated and difficult. The people settling here want trees; they want protection; they want fuel; they want fruit. And what can be done to aid them? Politicians send a commission to study the forestry of Europe. This will give the settlers on our plains little aid. We may about as well have sent a commission to the moon, as far as its effects upon Western forestry are concerned. What we need, evidently, is intelligent study of the conditions, and experiment here upon the ground. We are doubtful whether it will be possible to enlist the Government in this direction; but we surely can encourage private enterprise, and something may soon be gained which will avail hereafter. We think this Society has already done good service in encouraging the planting of native trees, first as nurses for more unreliable exotics. This matter has been repeatedly presented in the discussions of this Society, and, I am pleased to know, is bearing fruit in the plantings of our western farmers. Under the timber act as now amended, a vast number of trees have already been planted, and the most satisfactory results may reasonably be anticipated; and one of the most promising features in this movement is found in the fact that so large a number of our planters have depended upon our native trees. A few years ago almost every planter was directing his attention to exotic trees, with a result that can only be deplored, since so much valuable time, as well as money, has been sunk in costly experiments; and yet the facts deduced from these great losses must have been learned somehow. Many of our western farmers have taken their first lesson in forestry at great cost, but they have learned something which will direct their subsequent efforts. They have learned that a system of forestry peculiar to the old countries of Europe will be worse than useless here; and now that the people have come to act for themselves, good results may be anticipated. The older members of this Society, located as they are in the eastern third of the State, where timber and protection abound, can scarcely realize the great want of the west, nor can they quite understand the reason for our western members making forestry quite so much of a hobby; but move out there, gentlemen, where your heaviest timber is sunflowers, and your fuel corn, or coal hauled forty miles from the railroad, and you will feel that the question of tree culture will come right home to you.

A grand beginning has already been made in many of the western counties, and with the additional plantations which must be made in the next two years the whole face of the country will soon be transformed as if by magic. It is to be regretted that the question of protection has not entered more largely, from the very beginning, into the location and combination of tree plantations. The location of these plantations has, so far, apparently been dictated by chance, and while good results will doubtless follow in most instances, it is certain that an intelligent and systematic arrangement of plantations would furnish far more effective protection. I would urge, then,

that the laws which govern the motion of the air with reference to shelter belts be carefully and persistently brought to the attention of the people, by the reports or discussions of this Society, and by the newspaper press. While we cannot hope to change what has been done, we may shape, to some extent, the work of the future.

It must be admitted, we think, that fruit culture in the western half of this State will be attended with some difficulties, and not a little uncertainty. It must be confessed that there are atmospheric conditions peculiar to this region which do not promise the largest success. While we may look for some changes as the result of settlement, and especially of forestry, I think we have the best of evidence for believing that we can anticipate no great climatic transformation as the result of man's work. It is the favorite theory of some, that the climate of the Western plains is gradually changing. Yes, if we read the record which nature has written in the trees of this region, we shall find that for fifty, one hundred, and even two hundred years, the climate has been constantly changing, but never quite changed. It has been all through the past a region of fat and lean years—some as bountiful in their growth, one hundred years ago, as any which the white man has witnessed. Everything here gives evidence that this is a region of extremes. It appears to us worse than folly to attempt to carry out our plans as horticulturists upon the supposition that these climatic extremes will gradually disappear—that a golden climatic mean will finally be reached somehow through the settlement of this vast region, that will make these Western plains the Eden of the earth. Far better will it be for us to make careful and wise provision to meet the contingencies of the future. It will be far wiser for us to seek out some plan by which the evils growing out of these extremes may be averted. The question is not whether this country is to be settled—for it is already settled. It has naturally a fertile soil, capable of enduring more extremes than almost any other in the world; and, with favorable conditions of moisture and temperature, able to produce the grandest results. Now, how can we best meet the effects of the prevailing dry atmosphere? How can we best guard vegetation from the extreme heat of the summer sun and the coolness of the summer nights? How can we best protect against the alternate thawing and freezing of the winters? How can the extremes of drouth be avoided? And how can we most speedily protect ourselves against the ceaseless flow of the winds? These and kindred questions come home at once to the horticulturist; and we call upon you, gentlemen, to give them that consideration which their importance demands.

The ends proposed will not be reached immediately, nor will the simple act of this Society accomplish much unless we can enlist the entire horticultural interest of the State in this matter. The people must be brought to think upon this subject; and to effect this, it must be talked up, and written up, and kept constantly before the public mind. In place of trying to ignore the real state of the case, we should accept at once the real and certain diffi-

culties of the situation, and seek for the best attainable remedies for these. Ten years ago it was reluctantly acknowledged by some that possibly fruit culture might be a success in eastern Kansas, and now fruit culture *is* an assured success here; but it is not yet settled what can be done in fruit culture in the western half of the State. The trials so far made do not, probably, determine the actual results, as they have not been extensive enough, nor have they been continued long enough, to settle the matter beyond dispute. It is evident that the ubiquitous tree peddler will make a rich harvest on the credulity of the new settlers, and millions of trees will be sold and planted and watched until nine-tenths, or even ninety-nine one-hundredths perish. Everything will be sold, and especially valueless varieties. If there are any humbugs to sell (and did you ever see a time when there were not?), this is the region where these people will sell them. It may be difficult to guard the masses against imposition, and yet something can be done by earnest effort on the part of the members of this Society.

If there are any plans which can be devised to encourage the planting of forest trees in the western counties, there is probably no grander or more important work for this Society. And if I do not read the signs of the times amiss, it is certain that we shall have more to do with the western part of the State, for the next ten years, than with the eastern portion. If this change in our work occurs, as anticipated, by the force of circumstances, it will involve some important changes in our investigations and discussions. While no one can recommend the slackening of interest in fruit culture, we must take up with more zeal the questions relating to forestry, and examine them with reference to the conditions peculiar to the western part of the State. There are some important questions relating to this matter, as already intimated, which demand much time and thought, and this must be given upon the field. It cannot be done upon some other field, or by studying the precedents of European planting. The work must be done here, and by our own men. I believe this is to be the work of our Society. Are we ready, gentlemen, for the emergency?

Remembering what has been done by the efforts of this Society in the past, we believe we may anticipate grand results in the future. Anticipating, then, much in the future, we gladly and trustingly look for this Society to carry out the grand purposes of horticulture in Kansas.

DECEASE OF GEO. WEIR, OF UNIONTOWN.

J. W. Latimer, of Pleasanton, announced the death of George Weir, for years a member of the Society, and moved the appointment of a committee to prepare and report to the Society, during its meeting, proper resolutions of esteem and tribute in memory of the deceased.

The motion prevailed, and the President announced, as a committee on the decease of Geo. Weir, the following gentlemen: J. W. Latimer, E. P. Deihl, and Dr. J. M. DeBall.

The Committee on Arrangements reported a programme for the work of the following day.

Meeting adjourned.

WEDNESDAY MORNING.

The Society was called to order by the President, who opened the exercises with prayer.

MISCELLANEOUS BUSINESS.

The committee on obituary, by J. W. Latimer, offered the following report:

TRIBUTE OF RESPECT TO DECEASED MEMBER GEO. WEIR, OF UNIONTOWN.

Whereas, An all-wise and beneficent Creator has, since our last annual meeting, removed from earth our honored and highly-esteemed member and companion, Geo. Weir, of Uniontown, Kansas: therefore, be it

Resolved, That we, the members of this Society, do hereby express our deep sorrow in the loss sustained by this Society and the horticultural interests of our State, of a faithful and enthusiastic worker, in his death.

Resolved, That we fully sympathize with the members of his family in this their sad bereavement, and that our Secretary be instructed to furnish them an authentic copy of this expression of the Society, and secure for publication in our annual report a biographical sketch of the deceased.

J. W. LATIMER,
J. M. DEBALL,
E. P. DEIHL,

Committee.

On motion, the report was adopted, and ordered spread upon the records.

CREDENTIALS OF DELEGATES

Were presented, and the following were admitted:

Southeastern Horticultural Society—J. W. Latimer, Pleasanton.

Anderson County Horticultural Society—A. A. Adams, Garnett.

Douglas County Horticultural Society—E. A. Coleman, Lawrence.

Johnson County Horticultural Society—G. M. Waugh, Gardner; H. Perley, Spring Hill; B. M. Crust, Stanley.

Montgomery County Horticultural Society—L. A. Walker, Independence.

Manhattan Horticultural Society—Prof. E. Gale, Manhattan.

Dickinson County Horticultural Society—J. W. Robson, Cheever.

Wyandotte County Horticultural Society—M. B. Neuman, Wyandotte.

SECRETARY'S ANNUAL REPORT

Was called for, and read, as follows:

Mr. President, and Associate Members of the Kansas State Horticultural Society: Another year's work of this Society will close with the work of this,

our twelfth annual meeting, and its results will soon be given to the public, to help make up the horticultural history of Kansas. As your servant, in obedience to the duties incumbent upon the office to which I have been assigned, it affords me pleasure to be able to report to you marked progress in our organized work, and a greatly-increased interest in the success of that work among the people of our State.

TRANSACTIONS OF THE BOARD.

At a meeting of the Board, called at the Secretary's rooms, in Parsons, December 13th, 1877, immediately following the adjournment of the eleventh annual meeting, the following business was transacted, to wit:

The chairs of standing committees were filled for 1878 as follows: Nomenclature, Dr. Wm. M. Howsley, Leavenworth; Botany and Vegetable Physiology, J. W. Robson, Cheever; Entomology, Prof. F. H. Snow, Lawrence; Orchard Culture, F. Wellhouse, Leavenworth; Forestry, Prof. E. Gale, Manhattan; Small Fruits, J. L. Williams, Oswego; Floriculture, Geo. Y. Johnson, Lawrence; Vegetable Gardening, A. G. Wilhite, Emporia; Handling Fruit, G. C. Brackett, Lawrence; Meteorology, Prof. F. Hawn, Leavenworth; Vine Culture, C. M. Ott, Olathe.

On motion, the Secretary was instructed to secure the publication of the transactions of the Society for 1877, in book form, bound in muslin, at the best terms possible; also, to call the Eighth Semi-Annual Meeting at Sterling, Rice county, provided that the Atchison, Topeka & Santa Fé Railroad Company could be induced to grant free transportation to members over its line.

On motion, the bills of Messrs. E. P. Deihl, for \$6.35, and Robert Milliken, for \$4.75, covering incidental expenses as officers, were allowed, and ordered paid.

The meeting adjourned, to meet at call of the President.

The several standing committees were promptly notified of their appointment, and each filed their acceptance.

The publication of the Society's proceedings for the year 1877 was awarded to Geo. W. Martin, State Printer; 1,000 copies, of 200 pages, in muslin covers, for \$685, and for each additional signature, \$28.63 $\frac{1}{2}$. This report, viz., vol. VII, by examination shows 162 pages more than the base in the estimates, therefore making the 1,000 copies cost \$1,000; also, it will be found by comparison to exceed any previous year's report 100 pages. The delinquency of several of the committees in reporting upon subjects assigned to them, and the revision and extension of our fruit lists in tabulated form (which all must concede to be of importance and of value to our reports), increased the labors of your Secretary materially at a period when the usual work of compiling and formulating his MSS. for the press was laborious. For this additional work in this office I have charged the Society as per entry in my financial report. The merits of the report in its make-up I leave to your judgment,

asking for your suggestions by way of any improvement. I desire, and shall always appreciate, any effort made by any member intended to assist me in increasing the value of these reports.

THE EIGHTH SEMI-ANNUAL MEETING.

Having failed to obtain such inducements from the Atchison, Topeka & Santa Fé Railroad as this Society would reasonably expect, and as conditioned by the Board, the meeting was called at Garnett, Anderson county, June 19th and 20th, 1878, as the most feasible point, and in response to an invitation of its citizens; and it is with pleasure that I say to you, that to the citizens of that city and its surroundings are due the earnest thanks of this Society for the cordial and appreciative manner in which its members were received and welcomed to their hospitality, and the deep and lively interest manifested for the success of the meeting and the work of building up our State horticulture. The meeting was very interesting and decidedly successful.

Referring to the proceedings of that meeting, there was one subject brought out and discussed at length, resulting in the following resolution, which would seem to be worthy of your further consideration and action, viz.:

"That the boards of school districts be urged, through the county vice presidents, to adopt necessary measures to plant the school grounds to groves of trees for shade in summer and shelter in winter, and so ornament the house surroundings as to make the whole a place attractive to the pupils; also, to urge upon the members of the school districts the importance of an introduction of a course of lessons in practical horticulture into our common schools."

That action of this Society has met with a ready and hearty support in educational circles as most worthy of State indorsement and action, and has been recommended by some county superintendents to the favorable consideration of our State Superintendent, for the purpose of securing a State action by the coming Legislature.

THE SECOND MEETING OF THE BOARD

Was called at the close of the semi-annual meeting at Garnett, June 20th, in the reception room of the St. Charles Hotel. Members present: President Gale, Vice President Milliken, Johnson, Van Deman, and your Secretary.

The special object of this meeting was to determine upon a series of questions referring to matters of interest to the horticulturist and important to the success of our work, to be submitted to the vice presidents of each county for their consideration and investigation, as a basis in part for their annual report to this Society.

These questions form Circular No. 8 of this Society, and, with an appointment, have been sent into the several counties and to the following persons:

LIST OF COUNTY VICE PRESIDENTS.

ALLEN COUNTY	H. E. Van Deman.....	Geneva.
	C. C. Kelsey	Humboldt.
ANDERSON COUNTY.....	A. A. Adams.....	Garnett.

ATCHISON COUNTY	John W. Fisher.....	Nortonville.
BOURBON COUNTY	J. D. Manlove	Fort Scott.
BROWN COUNTY	N. B. Wood.....	Troy.
	R. C. Chase.....	Hiawatha.
BUTLER COUNTY	W. H. Litson.....	Benton.
CHASE COUNTY	J. W. Byram	Cedar Point.
CHAUTAUQUA COUNTY.....	A. Ellis.....	Elk City.
CHEROKEE COUNTY.....	N. D. Ingraham.....	Baxter Springs.
CLAY COUNTY.....	F. E. Robinson.....	Clay Center.
CLOUD COUNTY	C. H. Sheffield	Glasco.
COWLEY COUNTY.....	Jas. Christian	Arkansas City.
COFFEY COUNTY	C. H. Graham	Leroy.
CRAWFORD COUNTY.....	Thomas Ping.....	Girard.
DAVIS COUNTY.....	Wm. Cutter.....	Junction City.
DICKINSON COUNTY.....	J. W. Robson	Cheever.
DONIPHAN COUNTY	S. Hatch.....	Wathena.
DOUGLAS COUNTY	G. Y. Johnson	Lawrence.
	T. M. Pierson.....	Kanwaka.
ELK COUNTY	Henry Welty.....	Elk Falls.
ELLIS COUNTY.....	Martin Allen.....	Hays City.
ELLSWORTH COUNTY	Dr. L. Sternberg	Fort Harker.
	W. E. Fosnot.....	Ellsworth.
FRANKLIN COUNTY.....	E. J. Nugent.....	Ottawa.
GREENWOOD COUNTY	Isaac Detheridge.....	Fame.
JACKSON COUNTY	W. D. Barnett.....	Holton.
	J. W. Williams.....	Cope.
JEFFERSON COUNTY.....	J. N. Hall.....	Oskaloosa.
JEWELL COUNTY	E. H. Snyder.....	Jewell Center.
	E. T. Byram	Jewell City.
JOHNSON COUNTY	Wm. Maxwell.....	Edgerton.
LABETTE COUNTY.....	J. L. Williams.....	Oswego.
	C. G. Wickersham.....	Parsons.
LEAVENWORTH COUNTY.....	Dr. Wm. M. Howsley.....	Leavenworth.
LINCOLN COUNTY	A. J. Davis.....	Lincoln.
LINN COUNTY	J. W. Latimer.....	Pleasanton.
LYON COUNTY.....	Robert Milliken.....	Emporia.
MARION COUNTY.....	W. H. Billings	Marion Center.
MARSHALL COUNTY.....	John McKee	Marysville.
MCPHERSON COUNTY	Myron Hall.....	Spring Valley.
MIAMI COUNTY.....	L. Bishop	Osawatomie.
MITCHELL COUNTY	E. A. Taylor.....	Beloit.
MONTGOMERY COUNTY.....	L. A. Walker	Independence.
MORRIS COUNTY.....	F. B. Harris	White City.
NEMAHA COUNTY.....	G. W. Phillips	Capioma.
NEOSHO COUNTY.....	D. B. Skeels.....	Galesburg.
	G. W. Ashby.....	Chanute.
OSAGE COUNTY	Jas. A. Drake.....	Osage City.
OSBORNE COUNTY.....	M. Mohler.....	Osborne City.
PAWNEE COUNTY.....	C. C. Chevalier.....	Garfield.
PHILLIPS COUNTY	Thos. Cox, jr.....	Phillipsburg.

POTTAWATOMIE COUNTY	Welcome Wells	Manhattan.
	Abner Allen	Wabaunsee.
RENO COUNTY.....	A. S. Dimock.....	Hutchinson.
REPUBLIC COUNTY.....	J. A. Mosher.....	Belleville.
RICE COUNTY.....	J. B. Schlichter	Sterling.
RILEY COUNTY.....	Prof. E. Gale.....	Manhattan.
SALINE COUNTY.....	Jonathan Weaver	Salina.
SEDGWICK COUNTY.....	J. G. Sampson.....	El Paso.
SHAWNEE COUNTY	Thos. Buckman.....	Shawnee.
SUMNER COUNTY.....	A. C. Smith.....	Wellington.
WABAUNSEE COUNTY.....	H. A. Stiles.....	Pavilion.
WASHINGTON COUNTY.....	John W. Bell	Washington.
WILSON COUNTY.....	G. B. Brown.....	Guilford.
WOODSON COUNTY.....	W. W. Smith.....	Neosho Falls.
WYANDOTTE COUNTY	W. W. Dickinson	Wyandotte.

CORRESPONDENCE.

Copies of Mr. C. W. Murtfeldt's resolutions relating to the subject of a National Department of Agriculture, represented in the Cabinet of the President by a Secretary of Agriculture, as per your instructions, were forwarded to our members of Congress, and responded to with the most favorable and encouraging assurances of an earnest support before that body.

This office, during the year, has received many communications from men of prominence in horticulture in other States, all expressing deep interest in our success as a Society. None are of a more earnest and kindly sentiment than those of Hon. Marshall P. Wilder, President of the American Pomological Society. The kind regards of Prof. C. V. Riley are tendered the members of this Society by letter of Nov. 22d; also, he expresses regrets that he is unable to assemble with us at this time.

The correspondence in our State extends into sixty-one counties, and it affords me pleasure to herein commend the promptness in response to every effort in our interest by those addressed, and the encouragement given from all quarters by persons in the work is of the most gratifying character. During no year since our organization has there been so general an interest in horticultural pursuits as during the one just closing.

CIRCULAR—GRAPE ROT.

From the Agricultural Department at Washington, D. C., I have received the following circular of inquiry:

DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C., June 28, 1878.

DEAR SIR: From the investigations of last season on the *grape rot*, it is thought that the rot may be a fermentation caused by the fungus known as the *Torula Sacchari* (or *cerevisiæ*), or "yeast or vinegar plant."

This fungus requires, for its germination and growth, high temperature, much moisture, and contact with some saccharine or albuminous substance. From all the indications, the grape is thought to be in the best condition for the attack, and most susceptible

to this disease, at the time of the formation and hardening of the seeds, as the vine at this period secretes the substances most inviting to this fungus.

To arrive, therefore, at better and more satisfactory conclusions in this connection, you are earnestly and respectfully requested, from as careful observations as possible, to answer substantially the following questions.

Respectfully,

WM. G. LEDUC, *Commissioner*.

QUESTIONS.

1st. Is the grape attacked by rot at any other period of its growth than that known as the time of "forming and hardening of the seed?" If so, at what other stages of its growth, and in what proportion of instances, and in what proportion of the crop?

2d. What is the degree of temperature of the air at which the rot commences, and under what temperature does it flourish or decline?

3d. Will the moisture of the ground be sufficient to generate and support the rot, without also excess of moisture in the atmosphere?

4th. What is the locality, exposure, drainage, soil, etc., of the vineyard observed; the variety and age of the vines, mode of sheltering the canes, etc.?

This subject being investigated by the Department is deserving of attention by this Society, and it is hoped that it will be made a subject of the fullest discussion during this meeting.

The chairs of the committees for the several fruit districts were filled as follows: Northern Fruit District, F. Wellhouse, Leavenworth; Central Fruit District, Geo. Y. Johnson, Lawrence; Southern Fruit District, L. A. Walker, Independence.

MEMBERSHIPS.

During the year the following persons have been enrolled in the life-membership list: Abner Allen, Wabaunsee, by first installment; Robert Milliken, Emporia, full payment; Geo. Y. Johnson, Lawrence, full payment; A. A. Adams, Garnett, first installment; W. E. Fosnot, Ellsworth, first installment: making a total number of life members at this date of fourteen. This life list should be largely increased. The payment of the fee of \$10 is made easy by being divided into four annual installments of \$2.50 each.

ORGANIZATIONS.

The counties of Anderson, Chase, Reno and Wyandotte have been added to our county horticultural society list during the past year.

To those of us who have been long identified with the horticultural interests of this State, the organization of that most favored and successful fruit-producing section of our State, Wyandotte county, affords us reasons for great rejoicing. In this organization we secure talent of a high order, and many earnest and enthusiastic co-workers. The gratitude of this Society is due to such persevering and determined men as Hon. W. J. Buchan, W. W. Dickinson and M. B. Neuman, the last two President and Secretary of that society, for so valuable an acquisition to our support.

In Anderson county we are indebted to A. A. Adams and Judge M. A. Page, Vice President and Secretary, respectively; Chase county, to J. W. Byram, Secretary; and in Reno county, to A. S. Dimock and L. J. Templin, President and Secretary, for successfully organizing these counties. I trust

it will be our pleasure at this time to extend a cordial and hearty welcome to their delegates.

Another district has been organized. We have been highly pleased to learn of the organization of the Northwestern and the Southeastern Districts, and now we hail with pleasure that of the Northeastern, with that veteran horticulturist, and for years President of this Society, Dr. Wm. M. Howsley, as President, and Dr. J. Stayman, Secretary. May it be our pleasure to welcome its delegates to this our twelfth annual reunion.

It is my pleasing duty to announce the total number of horticultural organizations in our State to be twenty-three, viz., three district, nineteen county, and one local. From letters from our county vice presidents, I gather evidence of several other counties preparing to organize during the coming year.

VOL. VII.

The entire number of 1,000 copies of vol. VII (Report for 1877) have been distributed, and still many have been disappointed in not being able to obtain one. Applications from non-residents have been refused, excepting in exchange with other societies. The number of copies printed is far too small to do justice to the tax-payers of our State. To accomplish such an increase will require additional State aid. It is but just that those who are taxed should receive the benefits; and wherever our Reports have been distributed, they make friends to our Society and ready workers for its support. The number of 2,000 would barely approximate the demand.

FINANCIAL.

Statement of Receipts and Expenditures from December 13, 1877, to December 3, 1878.

RECEIPTS.

Dec. 31, 1877—Of Treasurer, on warrant.....	\$32 80	July 8, 1878—Of Treasurer, on warrant.....	\$150 00
Jan. 22, 1878—“ “	17 06	July 31, 1878—“ “	45 70
Jan. 31, 1878—“ “	7 53	Aug. 31, 1878—“ “	4 28
Feb. 28, 1878—“ “	2 31	Sept. 30, 1878—“ “	4 35
March 30, 1878—“ “	2 60	Oct. 31, 1878—“ “	8 50
April 20, 1878—On warrant, at bank.....	48 75	Nov. 1, 1878—“ “	150 00
April 30, 1878—Of Treasurer, on warrant.....	5 70	Nov. 30, 1878—“ “	6 90
May 31, 1878—“ “	4 65		
June 29, 1878—“ “	23 95	Total receipts.....	\$515 08

DISBURSEMENTS.

Stationery	\$41 95	Salary for 1878.....	\$300 00
Postage	45 88	Bank account, loan April 20, due July 8.....	48 75
Shipping material.....	6 10	Interest.....	1 25
Expressage.....	16 35	Office rent, fuel and lights.....	15 00
Freights.....	3 20	Balance, per statement 1877.....	2 35
Furniture	2 20		
Telegram	2 70	Total disbursements.....	\$521 18
Traveling.....	35 45		

SUMMARY.

Receipts.....	\$515 08
Expenditures	521 18
Balance due Secretary's office, December 3, 1878.....	\$6 10

Bill for additional work, December 3, 1878:

To 100 pages extra in Volume VII.....	\$50 00
To 8 pages tabulated fruit list.....	24 00
To 8 pages composition.....	9 00
Total amount.....	\$83 00

The Treasurer's annual report was called for, and the following was submitted:

TREASURER'S ANNUAL REPORT,

From December 11, 1877, to December 3, 1878.

RECEIPTS.

Dec. 11, 1877—Balance in treasury.....	\$17 36
Dec. 13, 1877—Thirteen annual fees, eleventh annual meeting.....	13 00
Dec. 24, 1877—Abner Allen, Wabauensee, first installment of life fee.....	2 50
Jan. 11, 1878—Eight annual fees, by C. G. Wickersham, for Joshua Hill, Aug. Wilson, Wm. Meixell, V. Y. Knapp, T. C. Corey, W. P. Talbert, P. Davis, and John Cloughley, Parsons.....	8 00
Feb. 14.—Isaac Detheridge, Fame, annual fee.....	1 00
March 9—H. M. Thompson, Chicago, Ill., annual fee.....	1 00
March 9—C. C. Chevalier, Garfield, annual fee.....	1 00
April 16—L. Bishop, Osawatome, annual fees for 1877 and 1878.....	2 00
June 20—Five annual fees, eighth semi-annual meeting, for J. S. Hunt, J. C. Wooster, Chas. E. Dewey, R. M. Slonaker, Garnett, and S. S. Tipton, Mineral Point.....	5 00
June 20—A. A. Adams, Garnett, first installment of life fee.....	2 50
July 8—State donation.....	1,250 00
July 16—Wm. Cutter, Junction City, annual fee.....	1 00
July 24—Three annual fees, from R. Milliken, for J. H. Dolle, W. C. Spader, and L. S. Heritage, Emporia, for membership for 1877.....	3 00
July 30—G. Y. Johnson, Lawrence, life fee.....	10 00
July 30—R. Milliken, Emporia, life fee.....	10 00
Aug. 8—J. S. Chapin, Independence, annual fee.....	1 00
Total receipts.....	\$1,323 36

DISBURSEMENTS.

On warrant of President and Secretary.

Dec. 31, 1877—To Secretary.....	\$38 20
Jan. 22, 1878—“.....	17 06
Jan. 31—“.....	7 53
Feb. 28—“.....	2 31
March 30—“.....	2 60
April 30—“.....	5 70
May 30—“.....	4 65
June 29—“.....	23 95
July 8—To G. W. Martin, State Printer.....	800 00
July 8—To Secretary.....	150 00
July 29—To President E. Gale, office expenses.....	11 20
July 31—To Secretary.....	45 70
Aug. 1—To R. Milliken, Vice President, office expenses.....	23 15
Aug. 31—To Secretary.....	4 28
Sept. 30—“.....	4 35
Oct. 31—To H. E. Van Deman, office expenses.....	2 75
Oct. 31—To Secretary.....	8 50
Nov. 1—“.....	150 00
Nov. 30—“.....	6 90
Dec. 2—To Treasurer's expense bill.....	14 55
Total disbursements.....	\$1,323 38
Balance in treasury, Dec. 3, 1878.....	4 98

COMMITTEE ON PRESIDENT'S ADDRESS AND SECRETARY'S REPORT.

On motion, the President's annual address and the Secretary's annual report were referred to the following committee for examination and report: H. E. Van Deman, J. M. DeBall, G. M. Waugh.

On motion, the Secretary was instructed to act as a committee in making up reports for the Northern, Central and Southern Fruit Districts.

M. B. NEUMAN, Wyandotte county: My county society is preparing, through its President, W. W. Dickinson, a full and reliable statistical report of horticultural matters in our county, from the first planting to the present date, to enable its people to reach safe conclusions, on which to base our future work. I can see great good as a result of this action, and recommend a similar action to the consideration of each of our county societies.

Meeting adjourned.

WEDNESDAY AFTERNOON.

Society reassembled at the hour of adjournment, and the President announced the annual election of officers as the first business of the session.

ANNUAL ELECTION OF OFFICERS.

FOR PRESIDENT.

Dr. J. M. DeBall nominated Prof. E. Gale, and, on motion, Dr. DeBall was instructed to cast the ballot of the Society for the nominee for President for the ensuing year.

In accordance therewith, the ballot was cast as instructed.

FOR VICE PRESIDENT.

N. P. Deming nominated Dr. Wm. M. Howsley, of Leavenworth.

On motion of M. B. Neuman, Mr. Deming was instructed to cast the ballot of the Society for the nominee—which was done, in accordance with the motion.

FOR SECRETARY.

On motion of E. P. Deihl, Mr. Deming was instructed to cast the ballot of the Society for G. C. Brackett, of Lawrence. The ballot was so cast.

FOR TREASURER.

On motion of Geo. Y. Johnson, Mr. Deming was instructed to cast the ballot of the Society for F. Wellhouse, of Leavenworth, for Treasurer, and the ballot was so cast.

FOR TRUSTEES.

M. B. Neuman moved that the Trustees be selected, one from each of the fruit districts. The Society accepted the motion.

F. Wellhouse nominated M. B. Neuman, of Wyandotte, for the Northern District.

N. P. Deming nominated W. E. Barnes, of Vinland, for the Central District.

J. W. Latimer nominated H. E. Van Deman, of Geneva, for the Southern District.

On motion, the ballot of the Society was cast for the respective nominees as Trustees for the year 1879.

The President invited the reading of the following paper:

HORTICULTURE IN DOUGLAS COUNTY.

BY SAMUEL REYNOLDS, OF LAWRENCE.

Of all the progress made in the various material interests of Douglas county during the past decade, none is more apparent and prominent than that made in horticulture. This fact, which is patent to every one familiar with the fruit productions of the county, argues well for its future. Here may be found some of the largest and most productive orchards and vineyards in the State, and the number is annually increased as each successive spring-tide recurs. The Horticultural Society of Douglas county has for several years past been working persistently and faithfully to advance the interest of fruit growing; and its efforts, like "bread cast upon the waters," is seen "after many days." The Society, however, has met with some discouragement and opposition in its past history, but its present efforts give promise of great results in the future.

The greater part of those engaged in the production of fruit, to any considerable extent, unite with the Society in its efforts to improve and render profitable the growing and marketing of the many different varieties of fruit raised in this latitude. It is to be regretted, however, that a few of the prominent fruit growers in the county who ought to attend the meetings, and furnish their share of experience to the general stock of knowledge, ignore its claims, and refuse to assist in its laudable object of inculcating a practical knowledge of successful fruit growing. One main objection is, that there are too many impracticable and conflicting theories advocated, and the novice is consequently liable to be led astray. The reply to this objection is, that all practice is based upon theory; that truth never suffers by too much investigation; and that the young horticulturist is in but little danger of being led astray if he pursues those methods which experience has stamped with her seal of approval. Another man refuses to coöperate because there are "too many hobbies to ride," and one has to be bored almost to death with some one's favorite scheme, which he persistently brings to the front. The answer to this objection is, that every one, to a certain extent, is a specialist, and it is a great advantage to both art and science that such is the fact, for thereby thorough and profound investigation is concentrated, where otherwise it might be superficial. Another man withholds his support because his knowledge of horticulture has cost him much time and labor, and he therefore argues that he should not be required to give to the public gratuitously the result of his scientific research and practical experiments. This objection

originates in selfishness and misanthropy. It should not be entertained by any one desirous of promoting a good cause and benefiting mankind. Such a useful pursuit as horticulture should be encouraged by all proper means.

The meetings of this Society during the past season have been held in various portions of the county, thereby scattering its good seed. The September meeting was held near Hesper, in the extreme eastern part of the county, for the first time, and quite a lively interest was awakened in the subject of horticulture. One prominent farmer in that vicinity assured the Society that their orchards already growing would be taken much better care of, and many new ones planted the coming spring, as the result of that meeting. The good people tendered the members a vote of thanks for holding their meeting among them, and invited the Society to meet with them as often as would be compatible with its plan of operations.

The winter meetings are held in pleasant and commodious rooms in the University building. For this privilege, the Society is greatly indebted to Chancellor Marvin, who is himself an amateur in the science of horticulture.

The fair sex, both matrons and maidens, is well represented at all the meetings. Their deft hands always prepare a rich repast for the "inner man," served up in picnic style. This feature is considered one of the social bands which help to bind the Society more firmly together.

Another interesting exercise is that of music. A quartet club is organized from its members, who intersperse the exercises with excellent music. Besides this, there is a small instrumental band of good musicians, which forms another auxiliary.

The Douglas County Horticultural Society is a live institution, and is sure to make its influence felt even beyond the limits of its own county.

It is well known that the apple crop of 1877 was a prodigious one. Almost every tree in the county was overburdened with the weight of fruit; and this, after the previous year's full crop. It was foreseen that the crop of 1878 would be a light one. The prediction was fully realized, being not more than one-fourth of the previous year's crop. The early and summer varieties, however, were exceptions to the rule, as they produced average yields. Notwithstanding this great deficiency in the winter varieties, there were enough apples produced to supply the home market abundantly, and furnish the shippers of Lawrence 2,500 barrels for export. This estimate is very nearly correct, as all the barrels were made there, an account of which was kept by the coopers. This statement does not include the early varieties which were shipped by express in boxes, nor the crop from the extensive orchards of Mr. Barnes, of Vinland, which was shipped in bulk.

The average price paid for apples in Lawrence, the past season, was sixty-five cents per bushel, making for the whole amount shipped in barrels, allowing two-and-three-fourths bushels to the barrel, the sum of \$4,468. Within the last few weeks, the merchants discovered that an insufficiency of winter fruit had been stored, and have imported six car-loads from Michigan.

The crop of small fruit has been more than abundant—it has been prodigious. First, the luscious strawberry made its appearance in a full crop. Strawberries and cream, strawberry shortcake, strawberry parties, and strawberry festivals were all the rage. In fact, the strawberry was king for a while, but his reign was short. Then came the cherry—early and late; the raspberry and blackberry, all in superabundance. Massachusetts street, the principal business street of Lawrence, for several weeks was a perfectly magnificent fruit show from one end to the other. Throughout the county small fruits were used in great abundance, and large quantities put up for winter use.

The grape crop was an average one, though some vineyards suffered badly from fruit rot. This was accounted for by the over-abundance of rain during the months of spring.

The peach crop was also a very full one. The budded varieties bore well, and the fruit was excellent. Seedlings bore abundantly, but the fruit was small and of an inferior quality.

The amount of small fruits shipped from Lawrence by express, over the Kansas Pacific Railway, during the season, was, by an estimate made from the books of the company, 252,832 pounds, or about 126½ tons, which at five cents per pound, this perhaps being a fair average, amounts to \$12,641.60. There was also a considerable quantity shipped over the other roads, a statement of which was not obtained.

Colorado being the principal fruit market for Douglas county, most of the fruit was shipped over the Kansas Pacific Railway. It is well known that the rates of this road are extortionately high, the through freight on a barrel of apples being about \$2.50, and the express charges three cents per pound. If the tariff on this road could be reduced to reasonable rates, the horticulturists of Douglas and other counties would realize much better returns for their surplus crops. It is to be hoped the incoming State Legislature will take the matter in hand, and follow the example of the other Western States in regulating the railroad rates by legal enactment.

Douglas county possesses as fine a soil for fruit-growing as any found in the State, much of it being of the kind known as "mulatto," which is a dark, reddish loam, having a soft, porous subsoil. For quantity and quality this is considered the best kind of soil for fruit. From the large quantity of the different kinds of fruit trees planted every year, it does not require prophetic vision to see that horticulture will, ere long, be a source of much wealth to the county and State.

In answer to your Circular No. 5, it may be said that the wood growth of the apple, peach, pear, plum and cherry trees has been unprecedented the present year. The immense growth of the apple trees has been the subject of general remark.

The codling moth has been quite numerous and destructive in Lawrence and in the orchards contiguous, while those further remote have generally escaped the pest.

The horni-headed borer has been very destructive in this county, many of the neglected old orchards having been nearly ruined by it.

There has been but little twig-blight, and no apparent injury suffered from it.

Many of the orchards are sheltered with belts of maple trees, but those unprotected seem to bear and thrive just as well.

Wilson's Albany is the most successful strawberry, and almost exclusively propagated.

Knoxbury and Laysan blackberries are the only varieties grown. The practice is to cut the canes back in early summer, and then afterwards cut back the laterals.

The Miami and Dixie raspberries have been grown with success. The practice is to renew every three years. The Turner red has been planted in some extent the last year, with a good prospect of success.

All the varieties of forest trees found in our woods grow well on the prairie, if properly planted and well cultivated. The elm and walnut, however, are not natives.

New seedlings: By Mr. C. Ayer, a seedling peach of much merit, which was named "Ayer's Seedling," and by Mr. Thos. Conlin, a seedling peach, which was named "Conlin's Wonder."

The varieties of apples most in favor are: Red Astrachan, Early Harvest, Carolina Red, June, Cooper's Early Wonder, Lowell, Maiden's Blush, Wine, Yellow Blush Beauty, Winesap, San David, Missouri Pippin, Rawley Gemet, White Twig, Golden Yellow Red flower, and White Wonder Pearmain.

The principal varieties of hooded peaches are: Hale's Early, Crawford's Early, Early Orange, and Spring-like Wonder.

Of pears, Bartlett, White D'Anjou, Seckel, French Beauty, Howell, Louise and de Jersey, and Victor of Wabash.

The successful cherries are the Early Richmond, English Morella, and common Morella. The propagation of the varieties of the sweet cherry has been abandoned, owing to the depredations of the birds in the fruit.

The number of fruit trees in bearing for the years 1877 and 1878, respectively, will be seen by the following table:

	1877.	1878.		1877.	1878.
Apple	31,473	25,472	Pear	1,448	1,654
Cherry	1,122	2,275	Quince	2,705	2,754
Plum	4,736	4,471			

The increased acreage of small fruit has been proportionately large, but as there are so many small plantations, it is difficult to obtain the exact figures.

DISCUSSION ON THE ADVANTAGES BEARING OF FRUIT TREES.

M. E. NICHOLS. Some varieties become exhausted by the production of a single crop of fruit and require the use of one year in recovery vitality sufficient to bear and mature fruit buds for another crop.

B. M. CRUST: In Johnson county there have been two crops in two consecutive years. This year trees bloomed, but the embryo fruit was destroyed by the tarnish plant bug.

J. W. ROBSON: I have discovered the tarnish plant bug in Dickinson county this season.

The following essay was read:

FRUIT CULTURE IN SOUTHERN KANSAS.

BY L. A. WALKER, OF INDEPENDENCE.

Referring to facts that lead from the past to the present time, we may draw some inferences that will show to the practical orchardist, that "what we know" about fruit is only what may be known by any fruit consumer who chooses to draw upon very limited resources. Yet we submit the following.

Whoever may have contemplated, during the last quarter of a century, removing from the older and more northern States to the new that lie west of the Mississippi, may have done well to consult the excellent annual reports upon agriculture and horticulture that in these later years have been printed. This, however, was more limited at the period that marks the first settlement of Kansas; and many, keeping upon or near the line of latitude with their former homes, found in due time that they had to learn much, and forget some that they had known and practiced east.

Now an observing person in the study of the West in its relation to fruits, may take up, for instance, the excellent volumes of the Horticultural and Agricultural Reports of Missouri, and find from the general tenor of these works in any year that on and along the 40th degree of latitude the apple is most referred to as the fruit most cherished, and the peach is reported as not being at home north of about that parallel. In the reports upon fruit from the latitude of Cape Girardeau, he will observe that the peach and the grape are receiving more of the attention of fruit growers. Yet again, if he inquires into the planting, growth and products of the apple orchards of western Arkansas, he may know somewhat from them the fact that from natural causes and common care, the apple, peach and grape are there at home, in the 36th degree of latitude.

Kansas lies between. Southern Kansas has its lower edge just above 37°, and, like a clean sheet of paper, we may write what we will upon it. Scarce ten years since, there was no inverted sod upon the most of it. Time has not yet elapsed sufficient to demonstrate as to the apple; but not so of the peach and the grape. Yet thrice this length of time must come in the future to fix the status of the apple here. The annual Reports of the Kansas State Horticultural Society will contain in future years the record—in our favor, or against us. My sanguine friends would have me leave unwritten the last three words of the last sentence. We shall see, and in the future know

whether we at least exert that degree of intelligence that has made the apple a success so near us in a lower latitude.

The good people up north dilate upon results following great care, with hardy, extra hardy and iron-clad varieties of fruit, and most truly elevate themselves in the doing of it. Yet we, from natural and simple causes, think ourselves more highly favored; and are now realizing, notwithstanding our limited attention to good culture, the blessings of orchard fruits to a degree that has never been reached elsewhere in so brief a period after original settlement.

By contrast from results already obtained, it may be profitable to us to present our claims for favor as a fruit region. In this direction, we give facts running back and into a latitude $41^{\circ} 15'$ north, lying west of the Missouri river—a rich country, and a fair climate to such as are not particular about that. Seventeen years' residence in that locality found us very determinedly set upon southern Kansas. In these years, apples from Missouri came into market at Omaha over the Hannibal & St. Joseph and the St. Joseph & Council Bluffs Railroads; peaches from Illinois, in baskets, costing \$3 and upwards per bushel, over Iowa railroads; pears from California, at 40 cents per pound, fine-looking and tame; over the Union Pacific; plums from California, at five cents each, at the fruit stands; and other fruits from elsewhere. Starting south direct, in the month of August, 1872, we reached the Nemaha, latitude about $40\frac{1}{2}^{\circ}$; found peaches, Hale's Early, three for a dime, from first hands—home raised. Found in the market, as we traveled, grapes in Kansas everywhere south; and many apple and peach orchards. At Topeka a refreshing display of all fruits and vegetables, in season; peaches, 75 cents per bushel, yet we do not remember them especially on account of fine quality. In time we reached the Neosho valley. Some early chroniclers have said of this section that it was "the garden and the graveyard of Kansas"—evidently under the impression that a story one-half true was enough. We found peaches plenty, and in the counties east a drug in the market. Thence on to the valley of the Verdigris, to Independence, and we found excellent apples from southern Missouri, and better ones from Arkansas—price 75 cents per bushel.

We had reached the brightest side—the south tier of Kansas—the end of our journey.

Comparisons are said to be "odious;" so are "facts stubborn things." The States on the line above 40° , during and after the Rebellion, were at comparative leisure to send their fruits west, where they were in much demand, and the supply did not come from there. Missouri and Arkansas were fought over and tramped under on their western borders; yet from the necessarily neglected orchards in these States the settlers on the new lands of southern Kansas had brought to them choice fruits at moderate prices.

More manifest evidence need scarce be given to satisfy the inquiry as to

where the fruit belt is to be found—where the apple, peach and the grape are most certainly at home.

Yet more conclusive. The fruits of southern Kansas, grown in the sixth year from the leaving of the Indians and the beginning of cultivation, have been sent largely into the northern markets, and, in the face of express charges of \$1.50 per bushel, were sold, and pronounced superior to the best products of New Jersey and Delaware. And we were assured that if our ability to supply were adequate to the demand, we could control the market against Illinois and Missouri. For the results in the disposal of fruits of this region in the markets of the north, particularly at Omaha, see the Kansas State Horticultural Report for 1877.

We now refer hopefully to the general confidence in which the people rely upon their future fruit returns. The number of fruit trees planted, bearing and not bearing, reaches to nearly half a million in several of the most forward of the counties that comprise this district.

There is a generous rivalry in the race we run in Kansas, and with the world outside of Kansas. As yet we find much to cheer us, to invite us; much to encourage, much to discourage; yet, with patience, skill, and constant labor alone, under Providence, can we presume upon success. We cannot afford to not work for, care for, hope for and insist upon the placing of the fruit interests of Kansas high in the scale of industries—in time to stand second to none in all that will demand the care and attention of the State.

GAME LAW.

The Secretary announced the receipt of a communication from S. H. Stevens, Mayor of the city of Humboldt, on the above subject, which was as follows:

HUMBOLDT, KANSAS, December 2, 1878.

G. C. BRACKETT, *Secretary State Horticultural Society, Lawrence, Kansas*—SIR: To devise and place in practical operation the best means for the protection of wild insectivorous birds, has been one of the most commendable specialties of the State Horticultural Society. From its very inception to the last annual meeting, the work has been arduous and the interest unflagging; resolutions have been passed, committees appointed, bills drawn, legislatures memorialized, and laws enacted. It is sad—perhaps humiliating—to know that notwithstanding all that has been done by the ablest and best men in the State, the birds are still without protection. The bird law of 1876 was in part repealed in 1877 by the bird law of that year. The law of 1877 commended itself sufficiently to the Society to be incorporated in their report of that year. Section 6 of the law of 1876, which was declared unconstitutional at the July term (1877) of the Supreme Court (see 19th Kansas), is identical with section 3 of the bird law of 1877, and is therefore void. While the voiding of the section is important, there are more serious defects in the law. Whatever there is in a law for the protection of birds that permits or in any way aids or assists to place a commercial value, destroys the effect of the law. The first proviso in section 1 of the law of 1877 is fatal to the enforcement of the law. A law so framed as to permit the indiscriminate killing of birds at times certain, must fail in its requirements.

Respectfully,

S. H. STEVENS.

L. A. Walker offered resolutions, as follows:

Resolved, That the members of this Society view with regret the slaughter of the birds of Kansas intended to be protected by law, and against the shipment of which the present law of 1877 is a dead letter.

Resolved, That we request the Legislature of Kansas to make a law absolute against the killing and shipping of birds.

Resolved, That the several county horticultural societies, and all the friends in our State, be requested to unite with this Society, in pressing this matter upon the consideration of the members in our next Legislature.

Dr. J. M. DeBALL supported the resolutions. As the present law was inoperative, on account of defects, he hoped that one would be framed that could be enforced.

H. E. VAN DEMAN: The present law was drafted by a lawyer, and was considered sufficient for the purposes intended.

COMMITTEE ON GAME LAW.

On motion, the resolutions were referred to the following committee: H. P. Welsh, J. M. DeBall, and H. E. Van Deman.

Adjourned.

WEDNESDAY EVENING.

President Gale in the chair.

Exercises opened with music by the quartet club of the city.

By special invitation, the following lecture was delivered:

RELATION OF EDUCATION TO INDUSTRIAL PURSUITS.

BY PROF. JAS. MARVIN, OF LAWRENCE, CHANCELLOR OF THE STATE UNIVERSITY.

That some people should be educated, is conceded. Doctors, lawyers, and some grades of teachers and preachers, should have a "liberal education," whatever that means. When the test is applied, community at large measures the man by what he does, not by what he carries in the shape of diplomas and recommendations. If he knows and skillfully applies the principles of his profession, he succeeds. Few inquire when, where or how he was educated. He can wear his titles with assurance. If, on the other hand, he shows himself a novice in knowledge and a quack in practice, titles are a disgrace both to him who wears and the authority which has conferred the degrees.

Common people do not pretend to know much about legal forms, and less about the laws of health. They desire skilled and reliable aid when some crafty rogue invades their rights, or some malignant disease threatens the family. The preparatory knowledge to perform these duties in society must be derived from books, from the experience and practice of other men—subsequent investigation and personal experience add to the original stock. The skill must have its beginning in native aptness. Without this, all sub-

sequent efforts will show a bungling hand. No amount of knowledge from the schools, no protracted training, without natural aptitude, can make a competent physician, or a competent anything else, worthy of public favor and patronage.

Native aptness is susceptible of almost indefinite improvement. The difference between labor bestowed in training a student in the line of his natural aptitudes, if he have any, and the struggle to force his mind into a growth in some other line, is like the cultivation of a healthy tree: give it a good opportunity and it will grow to perfection, but if you try to give it an unnatural form, or use it for some unnatural purpose, you must keep a constant care, or it will disappoint your aims, and in the end is sure to die scrubby. A mind awake, a fixed purpose, a clear and definite knowledge of elementary rules and principles, must precede successful practice in anything. Observation and experience clearly show the advantage derived from a preliminary school training to any kind of professional life.

Somehow, men have come to think that a prescribed education ought to make the professional student a success, regardless of the native material on which it is applied. Educators are not usually allowed the freedom of choice awarded to the ordinary jockey. Should the latter undertake to develop the speed of a full-formed dray horse into a "two-fifteen" roadster, he would need no further proof of fitness for an insane asylum. One known to fame has said, "Give us brains to educate, and we will return to you men to succeed." Too many exceptions occur to admit of this as a rule. Far too many are put under the wrong kind of training—are bent and twisted out of the direction in which their strength and powers lie. The hurry of life pushes many a youth into the wrong road. The mind is biased and the course determined without any reference to natural fitness. Sometimes the very opposite course is selected from the proper one. The delicate physique, the sensitive nervous organism, which needs the sunlight and active employment to promote digestion and develop muscular growth, is bent over books and plied with incentives to drive the already dominant brain with a precocious energy. The result in thousands of instances has been the winding-sheet and desolate home. In thousands of other cases lingering weakness and the disappointment of early promise have cast their shadows over loving parents and nobly-ambitious children. On the other side, the robust, healthy, resolute boys and girls are early taught that they are made to work, to enter the arena of business, to push their own way by force—too frequently by mere brute force—through the world. Predilections of parents often determine the professional career of subsequent life. The father desires a lawyer or statesman to grace the family name, or physician to take the paternal title and office; the mother sees the ideal man in a learned and eloquent minister. Either is willing to make any possible sacrifice to secure the desired end. These laudable ambitions *may* be right in the line of successful effort, and they *may* point the way to a buried life.

Education improves aptitudes, so far as it quickens thought, intensifies and concentrates energies, and thus places at the learner's command—first, his own powers to think; second, the resources of knowledge. With these, let him elect his vocation. In most cases, the selection will be made in the process of growth, and without apparent effort to choose. If actuated by correct moral sentiments, he will make that vocation honorable. Any necessary work performed in an intelligent way, with a disposition to do it well, is honorable. A proper literary training never unfits one for such labor.

WHAT SHALL BE TAUGHT IN OUR SCHOOLS?

The times and social conditions—what is indefinitely called “the age in which we live”—must determine what is to be studied in the schools. In settling this question, theories are useful; experiments test the theories; but those who wisely elect for their course a “golden mean” will secure the best results. Any education, whether primary or higher, must fit a man to do something, or it is worthless. It matters little whether he stops with the simplest rudiments or climbs to the summit of the hill of science, his life is a failure if he cannot work better *with* than *without* what he has learned. All thoughtful men must admit that there is a total waste of money, time and effort in educating some persons. The loss commences with the first lesson, and is augmented by every additional one given. Such are the literary tramps, whose foolish conceits, or more foolish instructors, have deluded them into the falsehood that the world owes them a living without labor. He who would relieve his muscles, must more vigorously use his brains. Healthy action of either requires constant application of both. College diplomas are not “legal tender” for a life-long board bill. Titled claims to distinction are said to be dying out in the older countries: they are valueless in the New World. The cheap rates at which captains, generals, judges, and all sorts of doctors are made to order, and without orders, in this country, show how lightly titles are esteemed. They are little more expensive than complimentary resolutions sent to the “friends of the deceased,” and quite as fruitless, when substantial support is required. Work is what the world wants from every one of us. If we undertake to cheat society and the world out of our full share of services, some one will have to pay the penalty; and like most penalties for crimes, the award more than doubles the value first abstracted. Let the thought be emphasized: *The world owes no man a living without labor.* Time, effort, care in procuring an education, either general or special, do not procure exemptions from labor. They may enable us to change the form, may provide for a substitution of one kind for another, may wonderfully lighten the burdens, and bring to our quickened senses a thousand new delights to cheer the way, but no voluptuous ease. Society—the world—not only demands work from us, but places responsibility upon us to see that others work. If we refuse this guardianship, a part of their duties are laid upon us. What others fail to do, what they do poorly, and what they undo through ignorance or malice, the law of social economy will

exact either from their cotemporaries or those who come after them. Ignorance of these laws in society, laws as definite as the "ten commandments," and from the constant infraction of which the world groans under a burden which no language can exaggerate, the weight of which no human calculation can estimate, holds back now a millennial day for the race, bright as ever opened to apocalyptic vision.

When will men lay it to heart—put it upon their consciences—each to do his part?

The summary then is, no youth should be educated anywhere for an idle life. Our schools of all grades should inculcate industry; not that thriftless industry that is always busy but never accomplishing anything, but an industry that makes the most of life, perfects what is noblest in manhood. Youth should learn in our schools self-reliance, an economy of energy, an economy of time. With these they can hardly miss the other economies of money, friends and health. The grandest of all gains which may accompany every stage of learning, and which helps mightily in the strife of life, and without which the final victory never comes, is "a conscience void of offense before God and man."

AIMS IN EDUCATION.

You say that I have drawn an ideal picture—to fill it is impossible. But I ask, do not the possibilities of life lie in this direction? Are not the most desirable attainments along this line? What higher incentives to effort lie within the reach of humanity? Mental and industrial education are here combined. The great difficulty with too many students is that they have studied, not to be prepared to work to better advantage, but to be rid of work altogether. They find some men securing this end by the shortest way in making money, or in becoming possessed of money, and they propose to devote themselves to getting money. As one has said: "Some intelligent people think that this is a promising state of mind, that a desire to better our position is the most powerful incentive that we can feel to energy and industry. A great political economist has defended the existence of a voluptuous idle class, as supplying a motive for exertion to those less highly favored. They are like the Olympian gods, condescending to show themselves in their empyrian, and to say to their worshipers, 'Make money, money enough, and you shall become as we are, and shoot grouse and drink champagne all the days of your lives.'" (See Froude's *Hand Work and Head Work*.) What a mean incentive is this!

And yet multitudes not only estimate all values in dollars, but count all attainments worthless that do not secure dollars and voluptuous living. All such incentives are degrading. They deserve the stern rebuke so constantly administered: "Man shall not live by bread alone, but by every word that proceedeth out of the mouth of God." This has been too restricted in its application by the commentators. The Creator has spread for the hungry

spirit viands compared with which the epicure's feast is as the apples of Sodom.

Florence Nightingale is credited with the saying that he who learns the three R's without some honest industry in view, is sure to add to his knowledge the fourth R—of *rascaldom*. This thought may be extended to the whole alphabet of science and letters. Those who have no higher aims in life, who see no higher enjoyments than their own sensuous gratification, cannot know what a literary education means. Every industry is ennobled by bringing to its service a well-informed mind. The farm, the shop, the counting-room, the home, are graced by a liberal culture, while the professional man's office is disgraced by its absence.

WEALTH IN KNOWLEDGE.

With the right motives before the student, and the right methods of instruction to direct his habits of thought, the whole world of matter, society and mind becomes a living, growing reality to his own thought. Though his sphere of labor may be restricted, he lives in a larger world. There is more of it around him, under him, above and beyond him. There is more in the voices from the past, more in the prospects and possibilities for the future. By so much as thought compasses a larger field or takes in a greater number of enjoyable objects from the same field, by so much is the value of the individual life increased. This appreciation of value is like the additions to personal possessions by honest industry. It not only makes him who holds it a richer man, but adds so much more wealth to the State. What an inheritance does an intelligent, noble-souled man bequeath to his successors! Heaven's higher law saves such a legacy from all malicious or selfish divisions. Each and every heir can have the whole of it without prejudice to any other. Estimate the value of what a Franklin, a Washington, a Jefferson, a Lincoln, have left to the liberties of America; what a Horace Mann an Agassiz, a Nott, a Barnard, a Woolsey, have added to the breadth of our literary culture; what a McElvain, an Olin, a Wayland, and a host of other worthies from the "church militant," have contributed toward widening the fields and enriching the harvests of all that is grand and glorious in Christian charity. Sordid as men are often accused of being, they are not generally insensible to these contributions to our common inheritance. But these examples are to the wealth of the moral world, as a few large estates like those of a Rich or a Vanderbilt in the financial world. Were the only bequests made available to the rising generations the estates of millionaires, the race would be beggared indeed. The great body of wealth is in the lives of the millions. Without these toiling millions, the massed wealth of a few individuals were impossible. So it may be questioned whether a Socrates had been possible to Greece without the thousands of unnamed inquirers after truth who had prepared Greek thought for the philosopher's advent. "The fullness of times" for the Messiah's advent was heralded by

angelic choirs in the gospel pean—"Peace on earth, good will to man." No preceding age had witnessed so wide a literary preparation for the greatest event of history. Whatever phase of society we study, this truth is apparent: great lights in social, civil or religious life are like stars of the first magnitude—few in number. They shine out just when and where their light is most needed. How dark the nights would be if these were left alone; if all the tens of thousands of smaller suns—suns clustered in nebulous clouds of light—should recede from the blackening sky! So with men: common men, men never known to fame, fill the social ranks, direct affairs in church and in state, furnish the vast material wealth which drives all the world-wide industries and enterprises of every age. These constitute the great middle class in thickly-settled communities. They are the real energising force at the front of civilization, and the conservators of all that is worth saving in the progress of society.

THE CAPITAL AND LABOR QUESTION.

As great differences in wealth and that social position which wealth and poverty create become recognized, a war commences. This antagonism increases in force as the difference in position widens. Most men seek wealth for the power it gives them over their fellows, or for the place it secures them among their fellows. Envy rankles in the veins of the unsuccessful aspirants for power. These fan the prejudices of the ignorant and thoughtless. Those who have gained the eminence fortify themselves for defense. Their antagonists, led by vicious caprices or impelled by physical want, assail every unguarded point. The highest wages for the least labor, the abstraction of fruits from the field, provisions from the kitchen, raw material from the shop and factory, and occasional stray articles from any place, are common affairs. Then come the organized foragers. Bars and bolts, safes, time locks, night guards, and constant vigilance against all sorts of surprises, are requisite for nominal safety. As the war advances, the open declaration of hostilities is proclaimed in the roar of flames and the crash of fortunes. Men describe these scenes under the fallacious euphemism of "conflict between capital and labor." There is no such conflict. Capital and labor are parts of the one agency by which society subsists. Labor that in the end produces no capital is simply exerted to meet imminent necessity. Capital is not only a worthy incentive to industry, but an absolute essential to successful labor. Without it society dissolves. Even the organized bandit no longer terrifies the traveler when the hope of booty—capital—is gone. Divorce capital and labor, and the world becomes a wilderness. The conflict is rather because of an assumed superiority in the possession of capital, and a conceded degradation in the want of it. One of the many weaknesses of human nature is a love of power over others. This would be easily managed if not associated with a manifest disposition to make this power felt. The advantage gained by one who has a certain amount of capital with which to push any industry is a proper incentive for others to be frugal. The independence secured

in sickness, misfortune, old age, in possessing a competency, stimulates thrift in early manhood, and rewards habits of industry. The calls of humanity in times of disaster, of pestilence, famine, and a thousand other ills to which individuals and communities are liable, are constantly taxing any surplus capital. Without such surplus, what untold miseries must go unrelieved! But capital hoarded, the surplus hidden from society, has always provoked anathemas upon the miser's head. Capital flaunted in the face of want, as if by contrast to intensify the sense of degradation, widens the chasm between riches and poverty. The advantage of wealth to one who uses it in sumptuous living must be held as the despot holds his throne, by force. No bond of sympathy binds mankind to such a lordling. His peers in affluence affiliate only for the sake of mutual protection, or to gratify some remains of our natural longing for companionship. How widely different the tenure of wealth in hands ready to supply "food for the hungry, clothes for the naked, relief to the sick and in prison." These benefactions of wealth do not necessarily appear in the reports of charitable societies. Any man who prevents want or furnishes supplies to the needy through fairly-remunerated labor, is a benefactor. Wealth used in raising the standard intelligence of a people, in increasing their ability to do for themselves, in promoting their physical comfort or moral condition, is beneficently employed. Capital so used provokes no conflict with labor. The two are united in happy wedlock.

WEALTH IN POLITICS.

The most despicable of all ways in which wealth can be used is in buying position. He who buys his way to office, must pay his way *in* office. If his cash account shows a depleted exchequer, the deficiency must be replaced from either real or fictitious perquisites of office. Who is so blind to passing events as not to see the glaring frauds perpetrated upon society by these venal officials?—for, having first bought their positions, they must now sell at least enough patronage to keep their stock good for future enterprises. Yet some people, not blind, are so short-sighted as to only see the first hands defiled in this demoralizing traffic. They see certain officials devoting themselves to special legislation, to the passage of bills for local improvements, for corporations, for extension of privileges. The appropriation clauses in all bills are the points of special interest. And if a railroad, a city board of trade, a ring of brokers, some plethoric contractors, or a combination of whisky-mongers, pay for this legislative talent, who cares? But do these parties in the end pay these bills? Ask Western merchants and their customers where the money comes from to sustain railroad kings and corporations. Ask those who fill hungry mouths and patch ragged garments, how the contractor grows rapidly rich, and yet disburses his largesses so freely on election days. Ask the wife and children looking back to a home once theirs, now in the real-estate lists of the papers, where, for these years, the money kings obtained support for their lobbyists. Go to the hovel, the infirmary, or the more wretched home where the loving wife or mother in silent anguish

hides the shame of a wrecked husband or a debauched son, and you need inquire no farther where the money comes from to pay the whisky licenses, legislators, lobbyists and lawyers. The people, and for the most part those called the common people, pay all these bills. They pay them in high prices for transportation; in low prices for raw products and low wages for service in producing; in the reckless waste which attends a credit system which exhausts all surplus gains of the debtor to pay interest on the cost of things constantly wearing out; in the half-way protection which covers a most debasing traffic under forms of law, while drawing a lucrative support from its ruined victims. This venality does not stop with temporary losses and gains: it is casting its shadows like a solar eclipse over all our morning sky. The brightest and most beautiful spots in our landscape are falling under its somber pall. A free press, "the glory of America," is a civilizing force which no computation can determine. Free in the discussion of theories, the advocacy of truth, the defense of virtue, the enforcement of law, social and divine; free, also, to suppress and to pervert truth, to vilify the best of men, and to represent the vilest as paragons of virtue; free to abuse publicly those who privately refuse to take to their firesides the sickening dissections of human frailties and crimes fished from the lowest social cess-pools, and scattered everywhere, ostensibly to prevent, really to promote crime. Who is not often reminded of Pope's stanza? —

"Vice is a monster of such frightful mien,
That to be hated needs but to be seen;
But seen too oft, familiar grows her face —
We first endure, then pity, then embrace."

Free speech of the type with which we are rapidly becoming acquainted, helps wonderfully in driving every really competent good man for office out of the field. Men who really have the personal courage to face this double-faced foe do not like to immolate their families and friends. The result is, cheap officers, dear service; and the tendency toward bankruptcy in official integrity is too powerful to be contemplated without a shudder.

Is there no force or combination of forces strong enough and resolute enough to turn back this flowing tide? Multitudes of excellent people deprecate the condition of society which permits the purchase and sale of any *American's* birthright. They deplore the popular taste which relishes a breakfast or supper of tainted vices, even though coated with a savory sauce of literary euphemisms. They are not pleased with the coarse jokes and implied falsehoods used to defeat opposing candidates. So long as this multitude, constituting, as we believe, a majority of the intelligent people of the country, are overawed by a minority, are whipped into line by party trainers, terrorized by a mob of ignorance following these trainers like street boys after a circus, we have little to hope. When will these virtuous members of society see that the grandest opportunities ever offered to any people are now at our disposal? — that to secure to ourselves and our children this goodly in-

heritance, we must honor integrity in office by placing honest men in positions of trust, even at the sacrifice of party predilections? We must honor faithfulness to official duty by keeping men of fidelity and ability in charge of public interests, even though a clamorous throng press hard for the public spoils. We must honor an incorruptible ballot by prosecuting all known violations of the franchise laws, and by urging a higher moral standard in the duties of citizenship. We need a revival of political common sense and business honesty before we look for a political or social jubilee. So long as ignorant masses are at the disposal of demagogues, vile men will ply the trade of the demagogue. Ignorance and its concomitants removed, and the temptations to partisan frauds are greatly lessened. By intelligence is not meant simply a knowing how to read, but a judgment clear to discern and a conscience awake to vindicate the truth and the right, against the false and the wrong.

CASTE IN EDUCATION.

Any system of education which discriminates between the children of the rich and the poor, or between those classes pursuing different vocations, is hostile to republican institutions. Under a despotism of any kind, the child may be expected to take the family title and be required to follow the family trade. Such restrictions, whether regulated by law or custom, are impossible in a land of freemen. Any attempt to impose these should be met with most decided condemnation. All tendencies to the establishment of caste in society are barriers to a Christian civilization. Natural differences in physical and mental constitution, and in the surroundings of early life, must always secure in society variety in industrial tastes and pursuits. Laziness and vicious habits will doubtless continue to furnish street-corner loafers and bar-room loungers. Honest housewives at home will continue to provide sustenance for thriftless husbands and profligate sons. Silly mothers of frivolous daughters will continue to expend more than the business income of hard-working men, and so consign paternal estates to the brokers and themselves to poor houses, if not to *the poor-house*. The ranks of these various classes will be replenished by those from the farm, whose weedy fields miss the horse strength wasted at wayside hitching-posts, while their merciless masters abuse the country and their "hard vocations." Is it wonderful that the children of such homes loathe the lot to which they are born? No interest in the farm, the shop or its machinery, beyond the scanty return wrenched from offended nature to feed mouths addicted to cursing the very fountains of sustenance. Parents who degrade their own avocations, either by neglecting or maligning them, cannot hope to see their children enthusiastic in their love of these callings. Homes made wretched by neglect, impoverished by thriftless habits, despoiled of all higher intellectual enjoyments, where no good books are found, no newspapers and magazines taken, no music enjoyed, contrast sadly with the glitter and glare of city life. How the ignorant poor are captivated by the showy shop windows, by the illumi-

nated palaces, by the gorgeous equipage of those supposed to be better to do than themselves! A neat cottage, a well-kept garden, an orderly home, where chaste literature and home-made comforts bring occupation and rest to weary hours, furnish no envious gapers at these shadows of wealth.

WRONG MOTIVES AND AIMS.

One of the most prolific sources of discontent with rural life or business pursuits is a false aim in education. Youth are so frequently referred to professional and official positions as the goal of worthy ambition, that every bright boy comes to think that all his efforts from the first reader up must point toward the Presidency. He finds apology for laziness and neglect of lessons in some ignoramus who has reached a governorship or made a fortune by some sort of gambling. The end of popular ambition has been reached in the case noted without the legitimate means—honest, hard work. Industrious youth are too often trained to regard their literary efforts failures if they do not bring money or renown, or both. They are not taught that manhood is supreme—office and riches subordinate. Teachers have failed to impress them with the grandeur of a mind that draws happiness from the skies over us, the air we breathe, the verdure of the fields, or even the black soil turned in the furrow.

Heads crowned with golden or with gory laurels are reckoned among the earth's great. A Cincinnatus is deemed far more fortunate when called from his plow to guide the State than when resuming his home among the cornfields beyond the Tiber. A Washington as President of the new Republic is regarded more worthy of emulation than Washington retiring to Mount Vernon, preserving his country guiltless of a crown.

PREPARATION FOR CITIZENSHIP.

Under a free government, proper representation requires a call from the shop and the field to the forum, and then a return to private life. Interests connected with all our great industrial enterprises require intelligent representatives in legislation. Political demagogues may demand, but true statesmen, while we are free, will never concede the right of ruling to professional office-seekers. The best counselors are not always the most voluble talkers, nor are the only wise legislators those who can readily formulate a law or prepare copy for a bill. Wise laws well executed require little expounding. Litigations cost more from knavish constructions of law than from perverse intent in legislation. All citizens should know the fundamental rights and privileges of citizenship. Observation and experience show the importance of this elementary knowledge to every American youth. Recent events must awaken an intelligent public to the value of a better knowledge of political or social science. The relations of agriculture to manufactures, and to commerce, to the trades and professions, the laws of demand and supply, the means and the medium of exchange, are all questions of vital importance to us now. None of them are new. History is full of lessons on these topics.

Volumes many and weighty have been written on every phase essential to a clear view of these subjects. The only new factor for our calculations is an independent representative form of government. This very element should make us more conservative, more solicitous to know the right, and pursue it. A despotism may, by one man's decree, make or unmake laws. The great tide of republican legislation admits of no sudden changes without shocking the whole body politic. Men cannot vote, cannot legislate, cannot formulate nor apply laws intelligently, without a knowledge of these subjects.

If people will be ignorant, they must be led. Happy for them if they have wise leaders! Vassalage is even more varied than the races of men. An old Roman is quoted as saying: "We are all slaves—slaves to a set of petty tyrants." This may have been regarded a rhetorical flourish; but now as then there is a large percentage of truth in the figure of speech. Society is so bound together in all its parts that some chains must clank wherever ignorance exists. Men cannot be free and ignorant at the same time.

Again, ignorance is always destructive. The vices of the more intelligent are copied by the ignorant. These vices grow quickly into habits destroying health, inducing poverty, entailing disease and misery. Illiterate masses in cities are to the morals of society what the hovels in which they live are to the adjacent business houses, sources of pestilence and magazines ready to spread every terrible conflagration, ready to fan the flames that lick up the wealth bolted and barred from their touch. Dangers thicken when these classes see the sweat of their own brows mirrored in the garnished trappings of a dominant aristocracy. The pestiferous air will creep unseen through all the barred doors of the counting room; will waste away the earnings and soil the garments of the clerks in the offices; will slip stealthy fingers into the money drawers, and confuse the columns of the ledger; will poison the breath of your sons, and tarnish the brightest and purest bridal gifts with which you deck your daughter. Solid walls of prejudice between you and the ignorant masses will not protect your homes. By your bright parlor fires you may deem your little ones safe. You fail to scent the poisonous vapors that steal in at the side door, and bear the moral pestilence to the bedchambers of your children.

"DANGEROUS CLASSES."

A large collection of ignorant people are a constant menace to any well-organized community. Ignorance, poverty, crime, are the dreaded trio of dense populations. To keep them in *subjection* is the problem for aristocratic governments; to *supplant* them, the only security for republics, the only protection to a virtuous community. Save your family from fever by removing the deadly cess-pools; save your sons from vile associates by furnishing them with good ones. Many a man, to save fifty cents a month by employing a cheap hand, has prepared the way for his son to squander his patrimony. One of the best possible ways to encourage the poor in becoming intelligent and virtuous is by rewarding their personal efforts in a substantial way.

Pay for brain as well as muscular force. Pay for service which shall not rob your household of its richest treasures while it curses you for paying stinted wages.

The best possible safeguard for property is in a general ownership. Dangers thicken as wealth becomes concentrated, and a large operative class lose hope of possessing more than daily sustenance. Ignorance and moral degradation are sure to follow. The only escape from anarchy is through despotism. History is full of illustrations. Despotism may appear clad in mail, crowned with iron, or sporting a mitre and waving a cross; the power is still the same in spirit—always despotic. Civil and religious freedom go down together under a dominant homeless citizenship. Men may talk of antidotes in forms of religion, in organizations for reform, in legislative provisions for police and penalties for crime: all these together are impotent when the masses of people are simply struggling for physical existence. Break the loaves and fishes first for the multitude, and when they are filled, tell them of the Bread of Life. Give to every man not a promise only, but a prospect of personal good attainable by industry and right living, and a convert to your doctrine is almost certain. Good morals, a healthy religious condition, are not compatible with great social differences. A poverty stricken or an illiterate class not only embarrass the state, but constantly lower the standards of morality and religion in communities where they exist. With all the preaching and teaching of two thousand years, men as a body have scarcely learned the alphabet of the gospel. The wide realms of religious thought, affording the greatest and grandest of themes, such as prophets and sages have desired to look into, are yet a “dark continent” to the great masses. Much as we glory in the achievements of science to-day, how few are even striving to know the forces that move the world of matter or of mind. Surely, as teachers, as instructors of youth, we need not cease to labor for want of philanthropic incentives. The obstacles we encounter are the deadliest foes to humanity. As patriots, philanthropists, Christians, our country calls to-day. Salvation from ignorance and its concomitants is the gospel under which we are commissioned.

PRACTICAL EDUCATION.

Society in the city differs widely from that in the country. In no other particular does it differ more widely than in the social extremes found in the former and the general social equality in the latter. These differences appear on the surface. To a close observer, differences in the extremes of intelligence and ignorance are equally marked. Under the shadows of great libraries and mammoth publishing houses, thousands of illiterates pass their restricted lives. In the country a much larger proportion of the people read. More interest is taken in general education. Those who neglect opportunities for the instruction of their children are noticed, and public sentiment puts its condemnation upon them. Whatever the advantages for making an elementary education general in the cities, the country has this one additional: no

prejudice against association between poverty and wealth. All are nearly alike in social condition, so far as wealth fixes that question. Why should not this very fact inure to the advantage of our rural populations? And so it does. A greater per cent. of students from the country pursue a higher literary course of study than from the cities. A greater proportional number become teachers and enter other fields of literary labor than from the cities. A question almost wholly overlooked, is, What classes of interests are most subserved by the kind of education proffered to our youth? Is this education calculated to make home in the pure rural atmosphere enjoyable, or does it draw its brightest and best votaries toward the already over-filled cities? The most casual observation answers the question. Hundreds of briefless lawyers, hundreds of patronless doctors, hundreds of country parishes whose discontented shepherds are pining for a call to some city mission, make emphatic reply. Thousands of farms full of golden grains and luscious fruits are waiting to be won from the virgin soil by those whose eyes have caught glimpses of illusive fortunes in the scramblings of Wall street. How shall this tide be turned? When shall these rich fields become our Garden of Eden? Never until we make labor respected, because performed in a respectable way. Brain-work on the farm, in the orchard, in the home—cultivated brain used in doubling and trebling the products of the field with less muscular energy—these are the charms. Show that skill, culture, aptitude, apply in farming as well as in selling calico, and you have saved many a frugal boy from becoming a useless appendage to some unnecessary wareroom. Place the professional parchments for three-fourths of the candidates of the so-called “learned professions” in the hands of graceful, well-read and noble-souled women, who love rural cottage homes full of beautiful plants and fragrant flowers, and the cry of over-crowded professions will cease. Many a good farmer or mechanic will be saved from wasting his breath in some other calling to which he was never called. We need more well-read, wide-awake, enthusiastic farmers. To promote this end, we do not want less, but more, learning. The kind, the courses of study to be recommended, is a proper subject for careful investigation.

An earnest vote of thanks was tendered the lecturer for the kind consideration of the Society's interests in adding so valuable and interesting an addition to the exercises of the meeting.

The lecture was followed with several excellent pieces of music.

PROF. WHEELER, of Ottawa, was called out, and said: I can fully indorse the sentiments advanced in the address it has been our pleasure to listen to this evening with reference to a practical education. This kind of an education has an important and direct bearing upon the various pursuits of men, and determines in no small degree their results as to success or failure. It means abstractly, dollars and cents.

Now as to horticulture. To the man following this pursuit there is an

education constantly occurring. The mind is developing by his every-day work and observations. There is culture to his mind even in the planting and care of the things connected with his avocation. The classification of plants and fruits requires thorough education, and any one who can readily determine the varieties of fruit by their differences certainly is the possessor of a knowledge acquired through the channels of a most thorough system of education. In floriculture we have botany, and in entomology we have an extensive field of study, and as these branches are involved in the pursuit of horticulture, a horticulturist, to be thorough, must be a man of broad culture and extensive education.

M. B. NEUMAN, of Wyandotte, then followed, in these remarks: *Mr. President*—There is another lesson of the highest value that may be learned from the study of pomology. We have here spread before us a display of the most attractive varieties of fruits, constituting, however, only a small proportion of the entire lists known to pomologists, there being about nine hundred varieties of apples described by our leading authorities on horticultural nomenclature. Now, each one of those varieties possesses its distinctive differences from all the others, in the endless varying combinations of size, forms, colors, flavors and textures. To account, then, for all these differences in the same family of fruits, we are compelled to recognize the potencies of the developing forces embraced in the numerous constituent elements of the fruit, each acting as a factor of differentiating results, and each more or less potent, as combined in their myriads of possible varying proportions.

Now, for the clearer understanding of the characteristics and action of these developing forces, as manifested in each family of fruits, I take up and exhibit here before you a single one of these apples. At a glance you can readily comprehend the fact that all the seeds contained in this apple have been affected by precisely the same surrounding influences ever since their germinal origin in the blossom; yet the seeds of this apple, when planted in exactly like soil, and under identically similar conditions, will rarely produce trees of like habits of growth, and still more rarely will those trees produce closely-resembling fruits. Hence, it becomes most clearly evident that we must go back to the blossom of the fruit to seek the origin of the factors of these endless variations.

At this point we consider the well-understood fact, that the pistils of the blossoms are the conduits through which the germs and seeds of the fruit are respectively fertilized; and each of these pistils being about equally exposed to the fertilizing influences of the great variety of related pollen liberated by the bursting pollen capsules of its own and the neighboring blossoms, the germinal effects must be fully as varied as the influences thus affecting them. And these effects we trace into the trees grown from those seeds—causing the growth of branches, erect in one, more divergent in another, recurved ascending in a third, and widely spreading in a fourth; and causing, also,

equally marked differences in the forms, colors, flavors, etc., of their respective fruits.

Thus, then, we trace back into the minute particles of pollen the forces that chiefly, if not wholly, control all the differentiating results that characterize the respective varieties of each family of fruits. And the special qualities of these forces we are enabled to more fully demonstrate by the experiments of grafting scions from trees of erect habit of growth into trees of more spreading habit, and *vice versa*; the results of which will show that these scions will preserve the habits of the parent stock, not only in form of growth, but also in all the qualities and characteristics of their respective fruits, and entirely unaffected by the diverse habits and other peculiarities of the stocks grafted upon, and through which all food supplies are obtained.

The necessary deductions from these facts are, that the developmental forces thus imparted to fruits in their embryonic stage, by these particles of pollen, are not exhausted in the mere fertilization of the fruit germs, but that their action is further manifested in the development from the seeds of the distinguishing features of each new variety of any particular species of fruit; and that they only vary in their resultant effects by reason of the varied proportions of their combinations of the fertilizing elements.

But here we reach a point beyond which further research becomes impossible: for neither chemical analysis nor microscopic inspection can detect within these fertilizing particles the elements of their peculiar forces. Wherefore we are left only to increased admiration of the divine power which alone could invest such almost infinitesimal atoms of matter with the potencies requisite to produce the wondrous results we may so clearly trace from them. True, the materialist may argue that the pollen receives its inherent forces from the parent stock or tree. Granting this, it but removes the problem one step further back. But enough of such removes will lead us back to the time when there *was no such parent stock or tree*, nor any other vegetal organism whatever, from which such forces could possibly be transmitted. And at such a point we look in vain for the origin of any such forces, except to the Supreme Creative Power.

Then, in recognition of such clear truth, can the thoughtful pomologist dare assert a disbelief in the existence of an Almighty God, whose power and will are just as clearly displayed in these plain horticultural lessons, as they are in that most grand scale of forces whereby planets and solar systems are controlled in their harmonious movements in the vast expanse of the material universe?

JUDGE T. C. SEARS, of Ottawa: I have been exceedingly interested in the lecture of the Chancellor of the State University. It gives clear conceptions of the means to be used in solving some of the disturbances now existing in this nation. The laboring element is no longer subject to control, and it is because it is being educated—educated to think and act for it-

self and in its own interest. Our universities and high schools, and our common district schools, are all doing a good work in this direction. The secret of our national greatness lies in this element, and in its education lies the success and perpetuity of our republican institutions.

Meeting adjourned.

THURSDAY MORNING.

President Gale in the chair. Prayer was offered by the President.

COMMITTEE ON EDUCATIONAL MATTERS.

A. A. Adams moved the appointment of a committee to report on educational matters relative to the interests of the Society.

Motion prevailed, and the President appointed as such committee: A. A. Adams, Garnett; Jos. Savage, Lawrence; Prof. P. Fales, Ottawa; H. E. Van Deman, Geneva; H. P. Welsh, Ottawa.

COMMITTEE ON FINAL RESOLUTIONS.

Also, on motion, the following committee on final resolutions: Dr. J. M. DeBall, George Y. Johnson, E. P. Deihl.

SMALL FRUITS.

The Secretary announced the receipt of the report of the Committee on Small Fruits, by J. L. Williams, of Oswego, which was read by that officer, as follows:

REPORT.

From the best information I have been able to get, the success of small fruit this year has been variable. Last spring was very wet, and newly-set plants were more or less injured by it. During the early part of the season it continued so wet that as fruit ripened it was found to be of a poorer quality than usual. Many are somewhat discouraged by the low prices realized, but all should bear in mind that everything else is low in proportion.

Blackberries require less culture than any other of the small fruits, only needing about the same attention as corn.

Currants are a success, so far as a crop is concerned, but the care required makes the business too costly to be profitable.

Gooseberries are raised in abundance throughout the State. Many varieties have been tried, but the Houghton still leads.

Grapes are doing well where the vines have not been severely pruned. The opinion is gaining ground that there has been too much cutting back of grape wood heretofore, and many are doing little or no pruning this season.

Raspberries still hold their place as one of our best small fruits. More care is required in their cultivation than for either blackberries, gooseberries or grapes.

Strawberries are doing well, but some varieties were killed out this fall by dry weather.

Whortleberries have been introduced, and are quite a success about Mapleton and some other parts of the State. More attention should be paid to this fruit.

It is unnecessary to speak of the best varieties of small fruits, as all that will be brought out in your discussions.

DISCUSSION ON SMALL FRUITS.

WM. MAXWELL: I have not been in the habit of plowing my blackberry patch. I keep the walks cut out among the plants, about three feet wide, for convenience in picking fruit. I allow the rows to form about three feet in width; clip the canes at three feet from the ground, and then clip the laterals as they form on the canes, at a point one foot from their base. Do not manure or mulch the ground. I think mulching would be an advantage to the Lawton. This would be our most valuable variety if means could be devised to prevent its canes from winter-killing. I prefer the Missouri Mammoth to the Kittatinny. The fruit of the latter is rather bitter, some seasons, and the period of its ripening rather short. The Western Triumph overbears, and is perfectly hardy. Wilson's Early is unpalatable. In planting, prepare the ground as for corn; open furrows with a plow, six feet apart, and set the plants therein, three feet apart. I have used sections of roots, but prefer well-rooted plants. The white blackberries are worthless.

H. E. VAN DEMAN: The Snyder is not preferable to the Lawton. The Orange is very sweet, but the plant is tender. The Kittatinny is most desirable for all purposes.

H. KELSEY: I hardly believe that mulching the plants would prevent their winter-killing. Have found the borer in a few of the canes.

DR. DEBALL: I cannot indorse Mr. Maxwell's estimate of the Missouri Mammoth. It is a wild variety, dug up in the Grand river bottom, and sold for something valuable, at enormous rates. The only good results I know of, were in the proceeds of sales, which enabled the proprietor to build a fine residence. The Kittatinny is all we can desire. The only advantage in mulching this plant is to keep moisture in the ground, and keep the roots cool during the fruiting season.

J. W. LATIMER, Pleasanton: I prefer the Kittatinny. The Lawton will afford one crop in every three years, but whenever the Lawton yields a crop, the Kittatinny will also. The Missouri Mammoth and other varieties are useless.

H. PERLEY: I have Missouri Mammoth, Kittatinny and Lawton. Do not think manuring or mulching is the cause of rust on the leaves. The Kittatinny carries its ripening of the fruit through six weeks with me, which is long enough.

M. B. NEUMAN: I cultivate in quantity enough for family use only. The

Kittatinny leads all varieties in Wyandotte county. These discussions seemingly conflict. Every member should state the nature of his location and soil, and methods of culture, that we may be able to harmonize the difference in results.

G. Y. JOHNSON: On two farms adjoining mine, one has the Lawton and the other the Kittatinny. The former variety is the most productive. Long and unclipped canes frequently winter-kill, when those clipped do not. We must determine the adaptability of our localities by trial. The necessity of this is most prominently illustrated in our apple orchards. In a very few places, I find the Rhode Island Greening a success, while generally it is unworthy of planting.

DR. B. M. CRUST: Good underdrainage will prevent much of the winter-killing complained of. Hoeing is expensive. A cultivator drawn by horse-power is an economical and satisfactory method of culture.

J. W. ROBSON: Cultivate with a horse-hoe, head back canes at about three feet from the ground, clip the lateral growth of the canes as it forms, to one foot, mulch in fall, and cut out all fruiting canes as soon as berries are picked, and a most satisfactory result will be obtained. Both Kittatinny and Lawton have done well with me, yet I would only advise the planting of the Kittatinny generally.

CANNING AND PRESERVATION OF SMALL FRUITS.

This subject was considered. Dr. W. J. Newton, of Ottawa, had been testing the value of salicylic acid as a preservative agent, and, by invitation, submitted his process by the following paper:

METHOD OF PRESERVING FRUIT.

I regret that my time has been so limited by professional duties as to make it impossible for me to collect and prepare details of my experiments. We have all experienced the effects of that great evil, *fermentation*, in our attempts to preserve fruit. It is believed that fermentation is the proliferation and multiplication of bacteria, microzymes, etc. (germ life). It seems they cannot exist where salicylic acid is present in sufficient strength.

SALICYLIC ACID.—Salicylic acid was little known on account of the difficulty and expense of producing it, but was recently rendered available by Prof. H. Kolbe preparing it, by treating a solution of carbolic acid in caustic soda, with carbonic acid, at moderate heat. We find in a late treatise on *matéria medica*, by H. C. Wood, that its chief value is in destroying low organic forms and ferments. Prof. Miller, the great English chemist, says one part to two thousand arrests vinous fermentation. Prof. Vaughn, of Michigan University, says it is not injured by boiling.

IS THE ACID INJURIOUS?—Wood says a man took ninety-two grains in two days. Kolbe says that a twenty-grain dose did not affect digestion. It is prescribed in acute rheumatism, in twenty-grain doses, three or four times a day. I think it is a good blood purifier.

SAMPLE.—The grapes sampled by the Society were put in a jug, without sugar or cooking, and the acid, dissolved in cold water, poured over them and corked loosely with a cob, and kept in a room where the thermometer frequently went above one hundred—a severe test.

DIRECTIONS.—Strawberries, blackberries and raspberries may be put in jars, and seven and one-half grains of the acid to the quart (i. e., fifteen grains to the two-quart cans), dissolved in what you think to be enough cold water to cover, and pour over them. If it is not enough, add pure cold water until the fruit is covered an inch or more. Use no sugar.

LARGE FRUIT.—Large fruit will not be penetrated by cold water and acid; hence, I advise cooking. Estimate the amount you have cooking, and dissolve the acid in cold water, as above, and add to the fruit while cooking. Thoroughly mix by stirring. Care should be used to have liquid enough with your cooking fruit to cover it in the can an inch or more. Use no sugar except when preparing for the table.

TO DISSOLVE THE ACID.—Put it in a saucer, add a few drops of water, and grind to a thick paste with the finger; then stir while you add a few drops of water at a time, until sufficiently diluted to mix readily with water, or throw it in water and stir occasionally until dissolved.

CAUTION.—The acid must be thoroughly dissolved, and must thoroughly penetrate the fruit, and the fruit must not be exposed to the air by evaporation.

CANS.—Use the self-sealing glass cans, and turn down the lids, so that evaporation cannot take place.

Keep in a cool place; and if you wish to preserve the color of the fruit, place in a dark room, and you will be astonished at the perfection of the *fresh, natural flavor* of your fruit.

Remember, this is a new thing. Go slow, and learn to use it. It may be found that different fruits have different fermentations, and require a modification of the acid treatment. Some may have acetous, some vinous or other fermentation. Articles containing more starch require more acid. Rand states that bacteria, etc., are always contained in the atmosphere. If so, fruit exposed by evaporation would not be properly protected by the acid. But if the air has to pass through an inch or two of liquid to reach the fruit, I believe all bacteria to be destroyed by that strength of acid. We may find still less acid will do under favorable circumstances. Sugar it to taste when preparing it for the table. I think it will be found to require less sugar than without the acid.

If the grower can thus market his fruit when he chooses, and not be compelled to market in harvest, he is situated where he can appreciate it.

I have been asked if grape juice and cider could not be kept fresh. I see no reason why they could not.

I am greatly indebted to Dr. Bennett, of this city, for information and assistance. I shall continue experiments.

CURRANTS.

A. A. ADAMS: I have seen the Red Dutch variety full of fruit, planted in the shade of peach trees.

G. Y. JOHNSON, Lawrence: They do as well in the shade of a fence.

F. WELLHOUSE: Trees, while they may afford the necessary shade, impoverish the soil, and thus starve the plants, which causes failures in fruit.

E. A. COLEMAN, Lawrence: Rev. C. H. Lovejoy, near Baldwin City, raises currants by the bushel.

REPORT OF REV. C. H. LOVEJOY, Baldwin City: My first planting of currants in Kansas was in 1858, on sandy loam, having stiff clay subsoil; varieties, common red, large red Dutch, and white Dutch. They did well in plant, and were as productive as any I have ever seen in the Eastern States; were not troubled with the worm, so injurious in those States. They were planted on a northern slope; some were shaded, and not mulched, well trimmed and cultivated. Mulching with coarse manure is very important. I prefer well-drained soil, made rich with manure. The grasshoppers in 1876 ruined most of this lot. I have planted again, and these are doing finely—even those planted north and south, in my apple-tree rows. A partial shade is beneficial.

MR. ROLLAND, Ottawa: My plants are in the shade of a hedge-row and a grape arbor; heavily mulched. I never stir the ground around them, and they fruit as finely I have ever seen in New York.

HON. JAS. ROBB, Ottawa: Bushes planted on the north side of my dwelling are a success.

WM. MAXWELL, Edgerton: When planted on the east side of a paling fence, and mulched, succeed.

S. S. TIPTON, Mineral Point: When planted under trees and the ground is paved with flat stone, they succeed.

PROPAGATION OF THE CURRANT.

J. W. ROBSON: This is done by taking cuttings of the present season's growth as soon as the leaves drop, which is generally in August, and plant in finely-prepared and well-enriched ground; mulch as soon as planted. If not planted in the fall, they can be packed in moist dirt, in boxes, and stored in a cellar, and they will callous in time for spring planting.

H. E. VAN DEMAN: Cuttings generally fail if the leaf buds open before the lower ends of the cuttings callous.

VISITING GREENHOUSES.

An invitation to visit the greenhouses of John Lester, located in the suburbs of the city, was accepted; and the President appointed as a committee to report the observations of visit, Messrs. J. W. Robson, A. A. Adams, and H. E. Van Deman.

Meeting adjourned.

THURSDAY AFTERNOON.

President Gale took the chair at the appointed hour, and called the meeting to order.

Reports of standing committees were called for.

BOTANY. AND VEGETABLE PHYSIOLOGY.

BY J. W. ROBSON, OF CHEEVER.

When we examine the nature of plants around us, we at once perceive that their growth and succession are regulated by certain laws. Thus, we observe that all have a period of life to which they are more or less closely limited. Many of our commonest vegetables and cereals, and many of the plants which enrich our gardens with their flowers, live but for a single summer; springing up from seed, uprearing a lofty stem, putting forth expanded and beautiful foliage, unfolding gay and numerous blossoms, and finally withering away and undergoing complete decay, in the course of a few months. In others, on the contrary, the duration of life is greater, annually yielding fruits which are "good for food, and pleasant to the taste." In others, again, the duration of life is so great that it seems to be unlimited; but there is good reason to believe that the forest trees, which lift their massive stems to the light of day through a succession of many hundred years, have also an appointed limit to their lives. Every plant, then, has a period allotted by the great Creator of all, for its springing from seed, the unfolding of its leaves, the expansion of its blossoms, and its subsequent death and decay; but while death is the lot of each generation that "cometh up and is withered," the perpetuation of the race is accomplished by another law, which provides for the production by each individual, before its own dissolution, of the germs of new individuals, from which new plants may arise, that go through their allotted period of life, and in their turn decay, after producing the germs of a succeeding generation.

Now, besides these evident laws, another may be detected by a little observation: that the beings produced from these germs are in every essential respect similar to their parents; and that thus, after many thousands of generations, every plant or tree of the present day may be regarded with certainty as having had a representative at the period of the creation of the vegetation which now clothes our globe.

But to this last-named law there are decided exceptions. We all know how easily Indian corn will mix, if different varieties are planted together, and how necessary it is to plant different varieties far apart in different fields, in order to keep them distinct. We all know how that useful tuber, the potato, will vary, and assume distinct colors, forms and qualities. Wheat also has the same tendency to vary, and beautiful and prolific varieties are produced every year. Melons will mix and sport if different varieties are

planted close to each other. Squashes and pumpkins mix so readily that the rich and luscious character of the former will be seriously affected; and we, as lovers of fine fruit, ought to be grateful that nearly all the useful plants and trees composing the natural order *Rosaceæ* have a strong tendency to vary and run into endless varieties. The botanist has only to investigate the plum groves of Illinois or Wisconsin to convince himself how utterly futile it would be in him to pronounce which of the endless varieties which meet his astonished gaze is the true *Prunus Americanus*. The native plum of Arkansas, *Prunus Chicasa*; the sand plum of my native county, *Prunus maritima*, have each the same tendency spontaneously to sport into numerous varieties without the aid of the cultivator's skill. The common red raspberry, *Rubus strigosus*; the blackcap raspberry, *Rubus Occidentalis*; the bush blackberry, *Rubus Villosus*, have the same disposition to vary, for all the improved varieties of the two latter species, which we cultivate in our fruit gardens, have been found in a state of nature in their native wilds.

Many of our most popular flowers have the same tendency; so numerous are they that we will only allude to two species as illustrative of the whole.

I remember the introduction to Great Britain of the popular *Phlox Drummondii*, in the year 1830. The seed was received direct from the botanist Drummond, who was then in southern Texas. When the plants produced their blossoms there appeared a slight variation in all, either in the shade of color or the markings of the eye of the flower; and now that the florist has brought his skill to bear upon this particular species, numerous brilliant varieties of this floral gem now beautify our gardens.

When nurseryman Ronalds sold small plants of *Fuchsia Virgata* in London at one guinea apiece, he little thought that seeds of that same individual species would produce plants whose flowers would differ so much in shape, and in the proportional length and color of the calyx and corolla, that, if these had been collected and compared without the knowledge that they had been produced from one plant, they would have been regarded as distinct species. This tendency to spontaneous variation has been taken advantage of by the florist, and yearly superb varieties are presented to the lover of flowers as specimens of his art.

But there are some species which have not the least tendency to vary, and will come true from seed every year, in shape, size and color; but when the pollen of another species is applied to the stigma, variation takes place, and new varieties are produced widely different from the parents. We have an excellent example in the *Petunia phœnicea*, a plant bearing a small, deep-purple flower, that was grown in greenhouses and flower gardens forty years ago, and at that time was very popular for decorative purposes.

After the introduction of *Petunia nyctaginæflora* (a pure white) from South America, some industrious florist conceived the idea of crossing the two species, and a large variety of beautiful sports was the result, and now

florists in Europe and the United States are yearly producing superb creations—blotched, striped, margined and double—in endless variety.

Though the strawberry has been cultivated in gardens for many centuries, it is only but recently that it has been much improved. But when Myatt, of Deptford, England, crossed the small-fruited varieties with the large flowering South American species, he produced two varieties—Myatt's Pine and British Queen—which were then, and for many years, the wonder of the horticultural world. These are now exceeded in size and quality, and such berries are now becoming common, and excite no surprise, raised by our own intelligent cultivators. Just think of the wondrous size of President Lincoln, Crescent Seedling, and Sharpless!

It must be remembered that all our cultivated varieties of fruit are not natural forms. They are the artificial productions of our own culture. They have always a tendency to improve, and yet, strange to say, they have also another and a stronger tendency to return to a natural or wild state. It was a knowledge of this fact that led Thomas Andrew Knight, the most distinguished horticulturist of the age, to successfully practice the interesting and scientific process of cross-breeding, a mode now universally pursued by skillful cultivators in producing new and finer varieties of fruit.

"The process of obtaining cross-bred seeds of fruit trees is very easily performed. It is only necessary, when the tree blooms which we intend to be the mother of the improved race, to select a blossom or blossoms growing upon it not yet fully expanded. With a pair of scissors we cut out and remove all the anthers. The next day, or as soon as the blossom is quite expanded, we collect, with a camel's-hair brush, the pollen from a fully-blown flower of the variety we intend for the male parent, applying the pollen and leaving it upon the stigma of the pistil. If the trees are much exposed to bees or other insects, the blossoms operated upon should be covered with a loose bag of thin gauze, or they will perhaps get beforehand with you in your experiments in cross-breeding. Watch the blossoms closely as they open, and bear in mind that the two essential points in the operation are—first, to extract the anthers carefully before they have matured sufficiently to fertilize the pistil; and, second, to apply the pollen when it is in perfection (dry and powdery), and while the stigma is moist.

"In order to obtain a new variety of a certain character, it is only necessary to select two parents of well-known habits, and which are both varieties of the same, or nearly allied species, and cross them for a new and intermediate variety. Thus, if we have a very early but insipid and worthless sort of pear, and desire to raise from it a variety both early and of fine flavor, we should fertilize some of its pistils with the pollen of the best-flavored variety of a little later maturity. Among the seedlings produced, we should look for early pears, of good quality, and at least for one or two varieties nearly or quite as early as the female parent, and as delicious as the male. If we have a small but highly-flavored pear, and wish for a larger pear, with a somewhat similar flavor, we must fertilize the first with the pollen of a large and handsome sort. If we desire to impart the quality of lateness to a very choice plum, we must look for a very late variety, whether of good or bad quality, as the mother, and cross it with our best-flavored sort. If we desire to impart hardness to a tender fruit, we must undertake a cross between it and a much harder kind; if we seek greater beauty of color or vigor of growth, we must insure these qualities by selecting one parent having such quality strongly marked.

"As the seeds produced by cross-fertilization are not found to produce precisely the same varieties, though they will nearly all partake of the mixed character of the parents, it follows that we shall be most successful in obtaining precisely all we hope for in the new race in proportion to the number of our cross-bred seedlings; some of which may be inferior as well as some superior to the parents. It is always well, therefore, to cross several flowers at once on the same plant, when a single blossom only produces a few seeds."

Who of the members of the Kansas State Horticultural Society will devote a portion of their time to raising new varieties of fruit adapted to the climate of our State? I am sure it would be very desirable to have a new apple as good as the Jonathan or the Esopus Spitzenburg, that would keep as long as the Willow Twig, and the tree as thrifty, hardy and productive as the Ben Davis. The horticulturist who could produce a new variety of pear, with stout, short-jointed wood, finishing up its wood-growth early in September, *blight-proof*, and bearing fruit equal to the Bartlett, would be a public benefactor. Equally deserving would be he who could raise a new seedling strawberry having all the fine points of the Wilson's Albany, yet possessing the richness and sweetness of the Triomphe de Gand. Here is a wide field for our young horticulturists to experiment in. The door stands open: who will enter in?

Pardon us for alluding to a popular theory believed in by eighty per cent. of our farming population, viz., that common wheat, *Triticum vulgare*, will vary or degenerate into chess, *Bromus secalinus*; but no botanist can be persuaded that the essential character of any plant can ever be so entirely changed. *Bromus secalinus*, "cheat," or chess, is a foreign biennial weed, imported with seed wheat many years ago, to the great annoyance of all good farmers. The seeds of this weed have wonderful vitality, and appear fully-developed plants whenever the circumstances are favorable, so that the ignorant farmer jumps to the conclusion that his wheat has turned to "cheat," after having been frozen out during the winter, or when cattle have poached the ground and torn it out or eaten it off. There are many "false facts" and erroneous observations, which are often quoted by those who argue the *affirmative* of the chess question; but they all yield to the lights of science, or to true observations of nature as it is. No change takes place in species, but only through the blossoms, the organs of reproduction.

We admit that in the production of new varieties of fruit, puzzling questions suggest themselves to the practical horticulturist; questions that even vegetable physiologists will not undertake to answer; questions so startling that master minds like Darwin and Huxley, in their attempts to unfold the mystery, have ignored the revelation which the Creator of all these wonderful forms has given us, and driven about "natural selection," "the survival of the fittest," and the "variation of the species under cultivation." But the devout mind always goes back to the record. Thus it reads: "And the earth brought forth grass and herb, yielding seed after its kind; and the tree yielding fruit, whose seed was in itself, after its kind, and God saw that it was good." God never makes any mistakes.

DISCUSSION ON THE REPORT.

GEO. Y. JOHNSON: I consider the point brought out in this report, viz., the necessity of producing new seedling fruits for our State, an important one, and worthy of an earnest and continued effort by the members of this Society.

F. WELLHOUSE: Dr. Wm. M. Howsley, of Leavenworth, at the age of eighty years, planted a lot of apple seeds saved from Winesaps, and in 1878 some of these seedlings bore specimens of fruit. One resembles the parent, though much larger, a better keeper, and of finer quality. If our people would plant seeds of crosses between some of our present valuable varieties, we might obtain therefrom a list of apples more valuable for our State than any now known.

TELEGRAMS.

The following telegram was transmitted to the Michigan Pomological Society, then in annual session:

OTTAWA, KANSAS, December 3, 1878.

To the Michigan Pomological Society, at Paw Paw: The Kansas State Horticultural Society, now in session at the city of Ottawa, send most fraternal greetings, with the earnest desire that the labors of your Society may result in the fullest success during your present session.

(Signed)

E. GALE, *President*.

G. C. BRACKETT, *Secretary*.

In response to which, the following was received:

PAW PAW, MICH., December 4, 1878.

To Prof. E. Gale, President of the Kansas Horticultural Society: Your fraternal greetings are received. We are pleased to report that we are now holding the best meeting this Society ever held. We would tender our greetings, and wish you eminent success.

(Signed)

L. T. LYON, *President*.

CHAS. W. GARFIELD, *Secretary*.

The Secretary announced the receipt of a paper from Hon. C. W. Murtfeldt, of St. Louis, Mo., and proceeded to read, as follows:

KIRKWOOD, MO., November 30, 1878.

To the President and Members of Kansas State Horticultural Society—GENTLEMEN AND FRIENDS: No one more than myself regrets that circumstances which I cannot control compel me to forego the pleasure of meeting my old horticultural friends in Kansas, in annual meeting, and of adding new names to the list. So frequently have I had the pleasure of participating in these annual gatherings, and so much enjoyment have I experienced from the cordial welcome always extended to me, that until the last moment I indulged the hope that circumstances would yet so shape that I could attend, and that the necessity for this lament might be done away. I bow, not only to the higher powers that be, but to the *highest* power, and can but come to the conclusion that all will be for the best.

You have my earnest prayers that your meeting may be both harmonious, instructive and profitable; and I beg of you, Mr. President, that you will assure all the friends, that although my body may be in St. Louis, "I am with you in spirit, beholding your order and your good works"! Kansas owes much of her rapid development, her present rank in the sisterhood of States, and her material prosperity, to the unselfish labors of the individual member and to the collective efforts of the Kansas State Horticultural Society. May good health and prosperity and God's blessing attend you all!

In conclusion, Mr. President and members, be pleased to accept the inclosed as a small

and humble contribution to your proceedings, to be printed in your annual report, or rejected, as you may determine. I petition that it may be read in your hearing, at the proper time.

Very truly and respectfully, your fellow-laborer,

CHAS. W. MURTFELDT.

THE FUTURE OF HORTICULTURE IN MISSOURI AND KANSAS.

BY CHARLES W. MURTFELDT.

"'Tis a long lane without a turn." This is an old and trite saying, and it may well be applied to the condition of horticulture in our State. And why? Because we have had no grapes for several years, not even in the vineyards which are cultivated by experts. Acres upon acres have been dug up, and the ground is now cultivated to corn or grass. Climatic influences and insects are to blame for this state of things. Last year, also, the apple crop failed for similar reasons; but this with us we may call an off year, notwithstanding we have had two crops of peaches in succession, and they were very fine. As usual, much of this luscious fruit was damaged and ruined by the "little Turk." The twig blight made unsightly a great many apple trees; and pear trees in many sections were damaged, and in many cases ruined entirely by the blight. We are apt to cry out like one of old, "All these things are against me."

Once or twice before have I written that it is useless to expect a condition of affairs such as would satisfy individual fruit growers, but would be ruinous to the majority of the fraternity, viz., that individual horticulturists have an abundance of some choice kinds of fruit of which their fellow-farmers have none, and that therefore they can fix prices and have markets and matters their own way. Whenever the ordinary farmer or orchardist has plenty of fruit to sell, it is only reasonable to infer that everybody else in that same section of country will have plenty also. But we have a large country, and without the proper knowledge of the condition of crops in other States or sections, men may part with their produce for less than its market value. You ask, how is everybody to know how the apple or peach crop stands in other portions of the country? I answer, by reliable reports from disinterested parties or State officials. The commissioners of agriculture and secretaries of State boards of agriculture ought to furnish reliable information on these points. It is only too apparent that there may be ulterior objects, such as to induce large immigration, or to advance certain local interests, which *may* lead every State official with an India-rubber conscience to prevaricate, or designedly to misrepresent, or at least to exaggerate growing or ripening crops. But these things are like chickens—"they come home to roost."

But to return to a thought just written. A man may have an abundance of choice fruit, while his neighbors and brethren of the same calling have but little, and that which they do have of very inferior quality. And now you all ask, how? I will try, in a measure at least, to solve the problem; but let me say just here it is no very new method, nor yet one upon which there is a patent right. Time and again, in one form or another, the method

has been pointed out; yes, and in a few instances you may have seen it exemplified. It is not a cheap method; it costs something, and you must be willing to pay the price if you would secure the reward; and this price is: 1st, labor; 2d, attention; and 3d, manure.

Labor means cultivation. Of course I am now speaking of bearing orchards, vineyards, or small-fruit plantations. No reasonable farmer would expect to harvest a crop of grain without cultivating his field. I have heard of, and even seen, volunteer crops; but never a good or even a medium crop of grain; never a crop upon which any money calculations could be founded. Now, you should not expect from your orchard what you do not expect from your field. Indeed, a man of sense never does. Then you must cultivate your orchard. You must prune it at the right time and whenever needed, so that you are never required to cut large branches or make large wounds.

Attention means to guard the fruit plat against insect depredations, blight, etc., or if these foes appear, to wage against them an exterminating war. I once visited my friend Parker Earl, at South Pass, Ill., after the peaches had set and were perhaps as large as marbles. He was up very early in the morning, and wheeled around his curculio catcher. Said I, "Mr. Earl, how long must you keep up this labor?" Answer: "Every day until the fruit is ready for the market." You see, my friends, it costs something.

Again, you wake some fine morning in June or July, and you notice blight in your trees. If you value them, lose no time, but apply the pruning knife, and keep it up all summer, if need be. There is hope that it will not spread if you apply the knife as soon as you notice it, and *burn* the branches affected immediately.

Again, our entomological friends have told us all about the natural history of the apple-tree borers, of the codling moth, and how to deal with these, etc.; but of what use is all this knowledge unless practically applied? We know that *Paris green*, when mixed with water or flour in due proportions, and applied, will kill the potato bug and its hideous larvæ; but, notwithstanding this has been trumpeted from Maine to California, and from the Gulf of Mexico to Minnesota, of what profit is it if we do not act upon this knowledge? It costs something in money and labor to raise even a crop of potatoes.

Fertilizers and manures are necessary to produce good crops. Admitted, that a great deal of the land in the Mississippi valley is naturally rich, and that in many sections it will produce crop after crop, is it not folly to indulge in the thought that its riches are exhaustless? Suppose our granaries, cellars and pantries are full to overflowing: are they therefore like the widow's cruse of oil and barrel of meal? Every sane man or woman knows that there is a bottom to every well-made barrel, and that by taking out continually it will be reached. Chemistry reveals to us the ingredients in their *ratio* contained in wheat, corn, potatoes, apples, pears, grapes, edible roots of various kinds—the various crops which are most exhaustive to the soil and those

which are less so—and an analysis of the soil tells us in what proportion certain elements exist naturally in the soil, and such as are necessary to bring the soil up to its highest fertility. I ask again, of what use is this knowledge unless we reduce it to practice, and keep the productive capacity of our orchards and vineyards, our fields and meadows, up to their *maximum*? Again, my hearers will not be slow to notice *that it costs something* to raise large and fine crops.

And now, my friends, the general public looks to such societies as this, and to the agricultural colleges and to the agricultural press, for such information as will enable a man, with only a common-school education and a *modicum* of common sense, to produce fine crops. To make the application and bring it home to all my hearers, you can have fine crops, fair and paying, if not monopoly prices, for the highest quality of fruit, if you will pay the cost. The majority of fruit growers and farmers are not yet willing to do this. I admit that there are natural causes and climatic influences beyond the control of man, which do make it impossible in certain years and in certain localities to raise fruits.

And this leads me to another point in my essay. Colorado is playing at fruit growing. The population of this State is steadily and rapidly increasing, and, from a sanitary standpoint alone, to say nothing of the gratification to the palate of such as are men of means, fruit is a necessity to the people of Colorado. I am not asserting that in a few places of southern Colorado, and by a few men, at great cost, fruits may not be grown on a limited scale, even in Colorado. But the elevation of most of the State is such, and the late spring frosts are so frequent, that universal fruit growing is practically out of the question. They can *raise* that which will buy fruit. In conversation, recently, with a very intelligent lady who resides at Colorado Springs, I learned that the earliest fruits in that market are brought from California, but by far the largest supplies in quantity and the best in quality are received from Kansas; and as this State is much nearer to that market, the expenses incident to the shipment of fruit are much less, also. Western Missouri, where some of the finest fruit in this great valley is grown, is a formidable competitor of Kansas in the Colorado market.

We ought not to lose sight of a large and permanent market in the north, which is increasing in magnitude and importance every day. The small fruits, viz., currants, gooseberries, strawberries, etc., can be grown in Colorado, and also in most parts of Minnesota; but the bulk of the fruits there consumed are brought from sections further south and east. And as the conditions of the fruit crop of 1878 repeat themselves, Missouri and Kansas may have a large crop next year, while Ohio, Indiana, Michigan and the East may not have more than the people there will need for home consumption.

—Since the above was written, I learn from authentic sources that for about six weeks one thousand barrels of apples per day have been put upon the Minneapolis market, at prices on a par with those realized in St. Louis, viz., from \$1.75 to \$3.00 per barrel.

REPORT OF COMMITTEE ON PRESIDENT'S AND SECRETARY'S RECOMMENDATIONS.

Your committee heartily concur with the statement of our President, that the vast treeless plains will, ere long, be thickly settled; and would recommend, in view thereof, that this Society make every possible effort to inform the settlers of that territory as to what are the most desirable classes, both of forest and fruit trees, to plant in that section.

We would further recommend that this Society hold a meeting on the line of the Kansas Pacific or Atchison, Topeka & Santa Fé Railroad, as soon as proper arrangements are made justifying such action.

That the present number of our published annual reports being altogether too small to meet the demands of our people, that hereafter not less than two thousand copies be printed.

We also advise an increase in the Secretary's salary, \$300 being insufficient to compensate for the valuable work performed by him.

That the traveling expenses of a delegate from each county and district horticultural society to the meeting of this Society, be paid from our treasury.

That the sum of \$2,500 for each year is the least amount that should be asked of our Legislature.

An *ad-interim* committee, as suggested in the letter of our former Vice President, Robert Milliken, read by our Secretary to-day, we also consider a means for greatly advancing the interests of horticulture in our State. Many new and valuable fruits, now unnoticed or unknown save to the proprietor, would be brought forward and distributed among our people, and much valuable information could be reached and given to the public, which otherwise would remain hidden and useless.

H. E. VAN DEMAN,
J. M. DEBALL,
G. M. WAUGH,
Committee.

Geo. Y. Johnson moved the adoption of the report, with the exception of that portion relating to expenses of delegates, which he desired stricken out.

The motion to adopt was concurred in by the Society.

GAME LAW.

The report of the committee was called for, and responded to by the following:

Your committee find that the game law of 1876 has been declared unconstitutional by the Supreme Court; and believing that the subsequent act of the Legislature of 1877 affords no protection, as desired by the people, offer the following, to wit:

Resolved, That our present Legislature be requested to pass an act prohibiting the killing of quails and prairie chickens at any time.

H. P. WELSH, *Chairman.*

COMMITTEE ON NEEDED LEGISLATION.

On motion, the President appointed E. P. Deihl, G. M. Waugh and C. H. Graham a committee to present the wants of the Society to the coming Legislature.

SMALL FRUIT.

Small-fruit culture was taken up and discussed, as follows:

H. P. WELSH: The culture of strawberries is my hobby. They afford us the first fruit of the season, and can be as easily produced as corn. Manure is not essential to success. The ground should be deeply prepared, plants well cultivated, and runners cut off. Col. Cheney is the first in the market, but is discarded as soon as other varieties appear, on account of its poor quality.

E. A. COLEMAN: The Doolittle raspberry is the earliest; Turner very promising; Philadelphia too tender. Seneca is desirable for family use, and too soft for shipping. Miami is a late variety, a good berry, but I prefer the McCormick for profit every time. Do not believe it is the winter that kills the canes; it is the heat of August, and then only when a drouth prevails. I would plant in rows seven feet apart, and three feet apart in the rows. In June, cut the canes back to within three feet of the ground. Laterals will form, which should be clipped to within one foot of the main cane. Cultivate constantly, and particularly during a drouth. I find all classes of vegetation endure a drouth far better when cultivation is kept up. Enrich the space between the rows in early spring, never spreading the manure nearer than within one foot of the plants.

A. A. ADAMS: I believe late culture is injurious. Canes on my grounds were killed with first freezing weather, I am satisfied.

Meeting adjourned till evening.

THURSDAY EVENING.

President Gale called the meeting to order, and the exercises opened with music.

MISCELLANEOUS BUSINESS.

The report of the Committee on Education was made by A. A. Adams, chairman.

REPORT.

Your committee desire to recommend that the Executive Board of this Society be constituted a committee to confer, at an early day, with the State Superintendent of Public Instruction, for the purpose of securing his recommendation for the establishing, in our State University and high schools, a special department for instruction in horticulture, and the introduction to the common schools of a course of elementary instructions in the same in-

terest; and further, to secure the setting apart of a specified day in each year to be devoted to the planting and culture of shade and ornamental trees and shrubs in the school-house grounds throughout this State: that the Secretary of this Society be instructed to furnish the Governor-elect and State Superintendent with a copy of the foregoing, with the request that it receive their consideration and notice in their respective message and report to the next Legislature.

A. A. ADAMS,
JOS. SAVAGE,
H. E. VAN DEMAN,
P. FALES,
H. P. WELSH,
Committee.

On motion to adopt, Mr. ADAMS remarked: To my mind, there seems to be no phase of our work as a society of more vital and immediate importance than steps toward securing a practical education for children, and for the entire people who are engaged in the art of horticulture. Look, if you please, among even your acquaintances who are engaged in commerce, law, literature, or any of the so-called "learned professions," and you will find nineteen-twentieths of those who are successful are those who are educated for their respective callings; and, on the other hand, do we not find nineteen-twentieths of those who fail are those whose education is most deficient in the pursuit they are following? With these facts and experience before us, does not this matter demand an earnest effort to provide for those who are to occupy places in the near future? Theoretical education to the novice in horticulture is not very available capital, but a system of education uniting theory and practice would be in advance of the present systems, as taught in our schools and colleges, and is deserving of the earnest support of every true patriot. As there is a rapidly-increasing demand for reliable horticultural knowledge in this State, it is most certainly proper, and an imperative duty, that this Society, the acknowledged leading power in this vast interest of Kansas, should take some definite and decided action in this direction before this session shall have closed. I believe any further delay on the part of this Society to be a dereliction of the duty we owe the people of the State, and fraught with dangers of a serious character.

REMARKS ON PRODUCTION OF NEW SEEDLING FRUITS.

G. Y. JOHNSON: One of the most interesting subjects of this session to me was lightly passed over to-day, viz., the production of new seedling varieties of fruit. I move that a committee be appointed by our President, whose duty shall be to investigate and report to this Society, at its next annual meeting, some practical means of working up such results. To-day I was opposed to asking of our State an appropriation to cover the expenses of delegates attending our meetings, desiring to use our influence to secure means for carrying out this work.

DR. DEBALL: We have now a large number of varieties under cultivation, and none of them are without fault, either in tree or fruit, or both.

They are the results of just such labor as Mr. Johnson's motion contemplates. It is the work of years, yet let us begin. Let this committee be composed of three of our most intelligent young men, who will enter upon it with zeal and determination to make the results valuable. We have done a noble work for our State, but there remains a higher mission, and this is a part of it.

H. E. VAN DEMAN: There are many valuable new seedlings already fruiting in sections of this State, and I hope this committee will be instructed to bring them to an examination and test, that their dissemination among the people may be made general.

S. S. TIPTON: There are quite a number of new seedlings fruiting in the Neosho valley. One of them resembles the Swaar in appearance, but is sweet in flavor.

The motion was passed; and the President appointed the following members as said committee: Geo. Y. Johnson, J. W. Robson, and H. E. Van Deman.

After an entertainment of music, the following report of the committee on fruits and flowers and to visit the greenhouses of John Lester was made:

REPORT.

Your committee find on the tables for exhibition fruits as follows:

By S. S. Tipton, Mineral Point: Specimens of apples—Kansas Keeper; pears, Glout Morceau, Vicar of Winkfield and Duchesse de Angouleme.

H. Kelsey, Ottawa: Apple—Missouri Pippin, Limber Twig, Rawles Genet, and McAfee's Nonsuch.

E. C. Tracey, Ottawa: Apple—Swaar, and others unknown.

W. B. Bass, Ottawa: Apple—Rhode Island Greening, and others unknown.

C. H. Graham, Leroy: Apple—Pickard's Reserve; pear—Vicar of Winkfield.

G. Y. Johnson, Lawrence: Apple—Ben Davis, Missouri Pippin, Kansas Keeper, Rawles Genet, and Winesap.

Messrs. Cramer and Chandler, Ottawa: Apple—Several varieties unknown to your committee.

Mr. Emerson, Ottawa: Apple—White Pippin, and others unknown.

A. Tucker: Rogers's plum, preserved in alcohol; a fine, large, red native variety.

Mrs. Pickerell: Wild plums, preserved.

Dr. W. J. Newton, Ottawa: Samples of fruit preserved in a solution of water and salicylic acid.

Dr. J. Pyle, Ottawa: Apple—Ben Davis, Willow Twig, Westfield Seek-no-further, and Missouri Pippin.

N. P. Deming, Lawrence: Apple—Huntsman's Favorite.

Also, a very choice collection of greenhouse plants, by John Lester, of Ottawa.

Your committee further report, that the greenhouses belonging to John Lester, of Ottawa, which this Society were invited to visit, are highly creditable to their proprietor. We found the collection of geraniums, fuchsias, tea-roses, carnations, and other winter flowering plants, cultivated for winter bouquets, were in a healthy, growing condition. The collection of foliage plants was very fine, and the general collection gives gratifying evidence that the "floral wave" that struck the Atlantic shore in 1840 has reached the city of Ottawa.

J. W. ROBSON,
A. A. ADAMS,
H. E. VAN DEMAN,
Committee.

FINAL RESOLUTIONS.

The hour for adjourning having arrived, the following final resolutions were offered by the committee:

Resolved, That we hereby tender our heartfelt thanks to the citizens of Ottawa and vicinity for their cordial reception and hospitable entertainment of the members of this Society during this session; and to the members of the choir, Mrs. Smith, Mrs. Sears, Mrs. Elmore, Mrs. Welsh, Miss Baxter, Miss Whitford, Mr. Giller, Mr. Reynolds, and others, do we feel deeply grateful for the music, which has greatly aided us in making our exercises interesting.

Resolved, That our thanks are hereby tendered to the several railway companies — K. P., M. K. & T., A. T. & S. F., L. L. & G., K. C. F. S. & G.—for the special favors granted our members in rates of fare. And further, be it

Resolved, That we hereby tender our thanks to the officers of this Society for their general courteous demeanor in conducting its deliberations.

On motion, the resolutions were adopted.

RESPONSE TO RESOLUTIONS OF THANKS.

In response to the resolutions of thanks to the citizens of Ottawa, Judge T. C. SEARS, of Ottawa, said: I feel that the obligations are rather due this Society from the people of our city, and in their behalf I now tender you our sincere thanks for the interesting meeting you have favored us with, and bid you come again, very soon.

CLOSING REMARKS OF THE PRESIDENT.

As the business of this session is closed, and we are about to separate, I wish to call special attention to the comprehensive and grand purposes of this organization in general, and also to the importance of the work which this session has inaugurated. This Society has already exerted a commanding influence in promoting the material interests of the State. It is destined to be a greater power in the future. It seeks to promote the interests of forestry in the western portion of our State, and it would have been exceedingly gratifying to many, if time had permitted, to discuss this important branch of our work during this meeting, especially as it is so easy to pass from forestry in general to that department of tree culture which belongs to home adornment or landscape gardening. Some may perhaps regret that we have not been able to set apart a portion of our time for the consideration of these

pets of every true home, and that so fittingly decorate this platform to-night, the *flowers*. But we shall probably have reason to feel that our time has been well spent, when we remember that advance steps have been taken upon that all-important subject, horticultural education for the masses of the people. On this subject the horticulturists of Kansas expect to be heard. And more especially shall we feel that our time has not been misspent, while considering the means essential to the production of new varieties of fruit, suited to the demands of our peculiar climate. An able committee has been appointed to take this matter in charge, and it is hoped that the work now begun may awaken an interest which will realize the grandest results in the near future.

In closing this session, I desire to express my heartfelt thanks for the unvarying courtesy and forbearance which has made the work of presiding at this meeting an agreeable duty.

I now announce the thirteenth annual session of this Society adjourned *sine die*.

APPENDIX.

REPORTS OF STANDING COMMITTEES FOR 1878.

NOMENCLATURE OF THE APPLE IN KANSAS.

BY DR. WM. M. HOWSLEY, LEAVENWORTH.

We have heretofore given a somewhat extended account of the confused nomenclature of the apple in the United States, and we will now turn our attention to the same subject, as applied to Leavenworth county, Kansas, and perhaps to the greater part of the State. Indeed, we know that this confusion exists in *some* other counties besides Leavenworth—perhaps in many.

RED ASTRACHAN AND SUMMER KING.

We select, in part, for our present consideration, the two fine and popular apples known and cultivated under the names of *Red Astrachan* and *Summer King*. If these two apples were not much sought after and largely planted, where well known, we would not now obtrude upon the public attention any description of them. But their great value makes it necessary to show the distinction between them, as they are, in many localities, pronounced to be the same apple. One of the most perplexing features of this confusion in nomenclature is, that the same apple is called by many names, instead of, as in the present case, two apples which are wholly distinct being called by the same name. The former error prevails to a much greater extent than the latter, but the latter is none the less important.

ORIGIN.—We find that the Red Astrachan originated in Russia, and was introduced into Sweden in 1816; thence into England, and was probably not introduced into the United States prior to 1818. The origin of the Summer King is pretty satisfactorily traced to North Carolina, in the United States. We obtained our trees of the Red Astrachan of Wm. Kenrick, of Boston, Mass., in 1837, and have been familiar with both the tree and the fruit ever since. The Summer King we obtained of A. D. Webb, of Bowling Green, Kentucky, in 1856, the parent tree of which, standing on his grounds, must then have been not less than forty years of age. This would make the tree from which we procured our grafts to have been planted at Bowling Green before the Red Astrachan was introduced into the United States. The Summer King has been traced back to an emigrant from North Carolina, more than seventy years ago. Hence, it cannot be the same apple.

THEIR EXTERNAL AND INTERNAL COMPARISON.—The Red Astrachan is a dark-red apple; the Summer King is a bright scarlet. The Red Astrachan is of medium size or over, and usually of conical shape; the Summer King is also of full medium size, but round in shape. The Red Astrachan, when fully ripe, has a remarkably white flesh, and quite an acid flavor; the Summer King, on the contrary, has a greenish-white flesh, and a very mild sub-acid flavor. The Red Astrachan has a white bloom on the surface, when ripe; the Summer King has none. The Red Astrachan, if allowed to remain on the tree many days after ripening, becomes quite mealy; the Summer King retains its freshness to the last. The Red Astrachan ripens its fruit, in eastern Kansas, from the middle of July to the 10th of August; the Summer King ripens its fruit from the 10th of July to the middle of September, and, with only tolerable care, can be kept till the middle of October. The Red Astrachan is but a short time in use; the Summer King is a long time in use, having ripe and green fruit on the tree at the same time for several weeks. We exhibited a specimen of the Summer King in fine condition at the fair in Leavenworth county, on the 10th of October, 1877. We know of no system of keeping by which the Red Astrachan can be preserved to so late a day, unless it be by excluding the air entirely, as in fruit canning. This marked distinction alone would seem to be sufficient to settle the question of a clear distinction between these two fine apples. The trees also differ in shape and in the color of the young wood. The tree of the Red Astrachan is more erect in its growth, and the young wood is darker than the Summer King.

We regret that so much time and space have been consumed upon these two apples, but we think it necessary, if for no other purpose than to call the attention of practical and extensive fruit growers to this question, that this confusion be not further perpetuated; or that their identity may be clearly and satisfactorily established, if they are the same.

We would state another fact in connection with the foregoing, which we think throws much light on this subject, and that is, that the Summer King apple was shown, several years since, at a horticultural fair at Louisville, Kentucky, by Mr. A. D. Webb, of Bowling Green, and no one at this fair was able to recognize or name it. If it had been the Red Astrachan, is it not remarkable that a man so well acquainted with fruits as Lawrence Young, who was then living and present, should not know it, as also Ormsby Hite, and various other professional fruit growers? Again: Mr. Webb either sent specimens of the Summer King, or a minute description of it, to Charles Downing, who is acknowledged to be better posted on the different varieties of apples than any man in the United States, and he failed to recognize or name it. If it had been the Red Astrachan, he would have been at no loss to pronounce it so.

CLASSIFICATION.

We will now take up a branch of this subject which we think will greatly aid us in arriving at a correct nomenclature, and that is the establishment

of a simple and concise CLASSIFICATION. It is well known that great confusion and controversy often arise at our fruit shows for want of some fixed and well-defined rule for arriving at a correct naming of the specimens before us. Appealing to the books, so far from settling the questions, often increases the difficulty, and renders the business before us still more embarrassing. These authors, instead of giving some general description, which can be recognized at a glance, spend their time in giving a minute and detailed description of a single specimen, to be applied to countless other specimens of the same variety, no two of which will, perhaps, exactly meet the description given; hence, these minute descriptions are frequently bewildering rather than enlightening, whereas a general description, which the eye can readily grasp, affords a greater aid than all the books combined. For this general description we present the following classification:

FIRST—*Time of Ripening*, as: Summer, fall, winter.

SECOND—*Size*, as: Large, medium, or small.

THIRD—*Shape*, as: Round, flat, conical, or oblong.

FOURTH—*Color*, as: Red, striped, pale, or russeted.

FIFTH—*Taste*, as: Acid, sub-acid, or sweet.

SIXTH—*Color of Flesh*, as: White, greenish or yellowish white, or yellow.

SEVENTH—*Core*, as: Open, or closed.

EIGHTH—*Seeds*, as: Large or small, many or few.

With this simple classification we think that a correct nomenclature is much more likely to be arrived at than those minute descriptions which are usually given in works on pomology, such as: The length and color of the stem—whether it is curved or straight; the width and depth of the cavity—whether it is russeted or smooth, red or green; whether the basin at the blossom end is deep or shallow, broad or narrow; whether the eye or calyx is closed or open; and the various distinctions of color, as deep or light shades, splashes or blotches. These are all too minute to be relied upon in but few, if any cases.

When, therefore, we lay aside all of this verbosity of description, and confine our investigations to a simple and general one, may we not hope, if not to be perfectly correct, at least to make a long stride in that direction?

It is known to many, and to none more forcibly than to the leading members of the State Horticultural Society, that those who grow fruit throughout the State frequently attend our annual and semi-annual meetings with but little other interest in our proceedings than to have one, or perhaps several, valuable apples, the name of which to them is unknown, correctly given; and it is humiliating to know, that in many cases these very persons return home more bewildered on this subject than when they came to the meeting. We apprehend that this difficulty would be greatly lessened if the examining committees would confine themselves to a simple classification such as the above, or to one still more simple.

We have thrown these thoughts together, not for the purpose of deterring any member, or all the members, of the State Society from attempting, ultimately, to reach a rule for a correct nomenclature, but to point out many of the difficulties which surround this subject, that they may be removed. While we speak of the many blunders that are common to all such organizations, we are at the same time aware that the efforts of the State Society and its auxiliaries have been of incalculable value to the fruit-growing interests of Kansas. Notwithstanding the many embarrassing circumstances by which the correct naming of the apple, the staple fruit of the land, is surrounded, we still indulge the well-grounded hope, we think, that the time is not far distant when, by persistent efforts, we shall be able to fix a basis by which a reasonably-correct nomenclature shall be reached. Next to that of correctly selecting the varieties best adapted to Kansas climate and soil, together with a judicious cutting-down to a reasonable length our present almost interminable list, lies that of correctly naming those which we have.

FOREST CULTURE.

BY PROF. E. GALE, MANHATTAN.

It is deemed best to present this report in the form of a *circular* to that large class of persons in the State who are directly interested in the planting and culture of forest trees. This course may involve the repetition of some things already published, but their primary importance is our only excuse therefor.

Tree culture must be counted as one of the great interests of Kansas. The relative importance of this interest increases with every mile traveled westward from the eastern line of the State. Its pecuniary importance is immense, for the value of all real and personal property is directly or indirectly affected by this interest. If tree culture can be made to reach the highest order of success, it will add greatly to the value of every farm and every home in western Kansas. It will have an immense influence upon the purposes of every man who may look to Kansas as a possible future home. But humanitarian as well as pecuniary considerations press this matter upon the attention of every settler upon the plains. No branch of horticulture enters so immediately into the very life of the farmer and his family as that of forestry; and its close relation to home adornment must give it a strong hold upon the whole people. As a form of investment, it offers to the settler upon the plains a means of adding to his permanent wealth more enticing and more sure than any other. A few dollars invested in a small forest will not only be a source of comfort and commendable pleasure, but of constant profit in the form of constantly-accumulating interest, compounded by the

liberal hand of Nature, thus enriching the planter and his heirs through all time.

In a country like ours, where almost all the planting is yet to be done, forestry and landscape gardening should hold the closest relation. Indeed, in view of the future, landscape gardening should be regarded as being at the base of all our forestry; and it may be well for us to remember that the love and appreciation of the beautiful in form, which is one of the essentials of the highest order of mental culture, should enter as an important element into all our instruction in forestry. But we do not regard this subject simply from the standpoint of securing beautiful homes, as giving us fuel and supplying the pressing wants of the farm, but also as answering one of the great demands of our climate. We want protection, and we want to check the ceaseless flow of the wind. The aims of forestry, then, are immensely important, and well worthy of the highest order of talent.

A few simple suggestions may aid those who have had little experience in the peculiar features of our climate and soil. The most essential points to be noted are: (1) Economy in planting and subsequent care; (2) The selection of trees suited to our climate and soil; and (3) the selection of such varieties as will most certainly answer the object sought.

ECONOMY IN PLANTING.

To secure economy in planting and subsequent care, we should begin with thorough preparation of the soil. It is worse than useless to plant forest trees, as many have done, without thoroughly breaking the prairie sod. Better throw the trees away at once than spend time in planting them in holes made in the unbroken sod. If the grass is not thoroughly killed before the trees are planted, there will be great difficulty in eradicating it afterwards. If the growth of grass does not drive the former from the field, it will certainly make the subsequent culture very expensive.

The plantation should also be so laid out that all the work of planting and subsequent culture, as far as practicable, shall be done with the aid of the horse. It frequently happens that plantations are so located that a portion of the work must be done by hand, or neglected altogether. Plant trees, then, always with reference to cultivating with the horse and plow. This will involve leaving ample room for turning and working on all sides of the forest.

Economy also will involve close planting, so as to relieve the farmer from all culture at the earliest possible day. On the ground of economy alone it is far better to plant trees in rows four feet apart than in rows six or eight feet apart, and better to have them planted one or two feet in the row than four or six feet, because when the trees are planted closely they will so much the sooner shade the entire ground, when the expense of culture will cease. Besides, trees planted closely are better formed, and will much sooner yield a profitable return for the various uses of the farm.

SELECTIONS OF VARIETIES FOR PLANTING.

It is also important that we select varieties of trees suited to our climate and soil. Nothing is more natural than to desire to cultivate those varieties of trees and fruit which grew about our Eastern homes, but when we change our homes we must expect our fruit and trees to change also. There is no safer rule than to select for our first plantation those varieties of trees that are native in our immediate vicinity. We must mainly depend on these in every case. We shall find Black Walnut, Cottonwood, Willow, Ash, Red and White Elm, Box Elder and Red Cedar the best. It will be far better to begin with such of these as we can secure than to import exotics. The Black Walnut, the Ash, the Box Elder, the Elms and the Red Cedar are to be raised from the seed, while the Cottonwood and Willow can be successfully propagated from cuttings. The Black Walnuts should be planted where they are to grow. The Ash, the Box Elder, the Elms and Red Cedar can be more conveniently raised in nursery rows. The cuttings of the Cottonwood and Willow should be prepared in the fall or winter, and buried in the earth until spring, when they may be planted in the forest or shelter belt.

While it is best in every case to begin with our native trees, we should be prepared to test some of the most promising of the exotic varieties. Among those that promise to be valuable may be named the Osage Orange, Catalpa and deciduous Cypress. Trials already made with the above trees give assurance that they may become of great value in this State. It will be wise, then, to give these trees further trial whenever it can be done without too great expense. Our list of trees so far is quite short; but after making a beginning, we shall be able to add to this list from time to time many valuable varieties without incurring heavy expense.

THE FIRST OBJECT

With the planter on the plains will be protection. To effect this in the quickest possible time, we shall probably select the Cottonwood, Willow and Box Elder, and very likely in the order here named. After these we should select (when it can be obtained) the Red Cedar, as furnishing the most effectual winter protection. Probably no tree will be more generally successful for a permanent shelter belt than the Red Cedar, and no evergreen ought to be more generally planted as soon as it can be obtained in sufficient quantities and at reasonably moderate rates. It is to be hoped that it will not be many years before our nurserymen will be prepared to furnish nursery-grown Red Cedars at such rates that the western farmers can afford to plant them by the million. The Box Elder will produce a low and dense shelter belt in a short time, and probably can be relied upon for this purpose far out on the plains.

After having made some provision for protection, the question of raising trees that will be more valuable for timber purposes may demand our attention. While the Cottonwood and Box Elder will give us shade and protec-

tion sooner than other trees, they are far from being valuable for timber. We shall then find the Black Walnut, Ash, Red Cedar, Osage Orange, deciduous Cypress and Catalpa are all valuable in this respect; and some of these, if not all, will doubtless in a few years be extensively cultivated on the plains.

Whatever the variety of trees planted, it will be of great moment to arrange our plantation in such a way as to give our home and farm generally the most effectual protection. There is really no question to which the farmer needs to give more careful study than to this one of protection. He should consider first the peculiar "lay" of his farm with respect to the prevailing winds. This should determine the position of his plantation, and the direction of his shelter belts. These are questions that must be studied on the ground, and which the farmer should carefully consider before beginning his plantation. Often this whole matter is left to accident, and the result is frequent disappointment at unseemly surroundings. By a judicious location, a very small plantation will often effect more in the way of protection than many acres of forest unwisely located. It will be well also to remember that a few acres of trees broken up into a series of shelter belts will effectually protect an entire farm, while if thrown in one mass upon some corner of the farm, may produce almost no climatic effect; hence, we cannot do otherwise than urge this question of the position and direction which the lines of shelter belts and forests should take upon the attention of all planters.

VEGETABLE GARDENING.

BY A. G. WILHITE, EMPORIA.

We shall not attempt to give the advantages that are derived from a well-cultivated garden, either financially, sanitarily, or as an enjoyment, but shall leave these to be shown by those who are more able and better qualified for that purpose.

The early vegetable crop in Kansas for the past year was abundant, and good in quality, so far as your committee have been able to ascertain. The late crop was short, and was poor in quality generally. Cause, dry weather, poor cultivation, and planting kinds that were not adapted to the climate. I have learned by experience, in the last ten years, that there are many kinds of seeds that are offered in our markets (even of the most common vegetables) that it is useless to plant here.

Then, in order to have a good garden, with plenty of good vegetables from early spring until late autumn frosts, *we should know how to prepare the ground, what to plant, when to plant, and how to cultivate each variety.* This would embrace more than your committee have time to set forth, and, in

many instances, the ability; but we shall give a partial list of some of the most important kinds of vegetables, with time of planting, preparation of ground, etc.

The first in order is good soil; second, its preparation. To prepare land for early vegetables, it should always be plowed in the fall before planting in spring. It should have at least thirty tons of barnyard manure to the acre. If thoroughly rotted and fine, spread on after plowing; if green and coarse, plow it under.

Asparagus.—Colossal is the best. Plant the seed in early spring, two inches apart in the drill, and cultivate one year; then transplant the roots into a row where you can plow on each side of them. Set the plants one foot apart in the row, plow each side of the rows thoroughly every fall, and mulch heavy with well-rotted manure, and apply salt—one quart to four rods of ground.

Beets.—For extra early, the Egyptian Blood Turnip; next, Early Basino; for general crop, Early Blood Turnip. Plant as soon as hard frosts are over in the spring.

Beans.—For general crop of string beans, Black Wax is the best; Golden Wax, larger than Black, and Stringless, with white seeds. Time to plant, from early spring to September.

Cabbage.—Early Jersey Wakefield is the best; take no other for early; for summer and fall, Fotler's Improved Brunswick. Start in boxes or hot-beds, about last of February. As plants begin to crowd, transplant into other boxes, and give plenty of warm sun in a window. Transplant into open ground from first to middle of April.—For late cabbage, American Flat Dutch is best. Time to plant seed, middle of May to first of June; time to transplant, from first of June to 10th of July. Cultivate well, and it will be a rare chance if a failure should occur.

Celery.—This is not sure unless you can irrigate.

Caruliflower.—This requires the same cultivation as cabbage; but requires more moisture, and is often a failure for want of it.

Lettuce.—Boston Curled is the best for general cultivation. Sow in a warm place on south side of fence or house, early in March.

Peas.—For early, Dwarf Champion of England; second, Carter's First Crop and McLean's Little Gem; late, Champion of England and Blue Imperial. Time to plant, as soon as the frost is out of the ground in the spring.

Radish.—For early, Rose Olive; second, Long Scarlet Short-top and Summer White Turnip. Time to plant, from early March till June.

Rhubarb.—Linnaeus is the best, very early and tender. Cultivation: Set the plants in rows three feet apart each way, and cultivate deep all the season; manure heavy in the fall each year. Take the roots up every other year and divide to one bud, or your root crowns will become hollow, fill with water and kill your plants in hot weather. This plant requires dry and deep soil.

Tomato.—There are but two varieties worthy of cultivation for general table use and canning purposes; these are Canada Victor for early, and Trophy for late. Sow the seed about the first of March in hot-bed or in boxes in the house, and give them the sun in some warm window. Transplant into other boxes from time to time as plants need room, until middle of May; then transplant into the open ground three by four feet apart, and stake up when fruit begins to set.

It is cheapest to buy plants of all kinds that have to be raised in hot-beds, where only few are wanted for family use, provided they can be obtained of some responsible grower near by.

HANDLING OF FRUIT.

BY G. C. BRACKETT, LAWRENCE.

To a close observer of the classes of fruit as found in our market-places, it is clearly evident that a larger portion of it has suffered serious injury from handling, before reaching the hands of merchants in this line of traffic; and from such recklessness, or the lack of a proper knowledge of how to do it, follows a material loss to the producer, and a demoralized sense from the depreciated values placed upon such-conditioned produce by those whose business it is to purchase for either home or distant markets. It would seem that the difference in values between fruit carefully handled and that recklessly handled would soon lead to a more intelligent understanding and adoption of better methods; and as the consideration is that of dollars and cents, the highest interests of the producer are involved.

The question, then, how to place this product in the market, not only in an attractive shape, but also in a condition that will justify the dealer in paying the highest price therefor, is an important one, and deserving of the attention of any producer, from the few bushels to the thousands. In this paper, I shall deal with the various classes of fruit which are leading in the markets, and in their seasons, as strawberries, cherries, raspberries, gooseberries, blackberries, pears, and apples.

STRAWBERRIES are the first fruit of the season, and, being of a soft character, are as difficult to handle properly as any other. These should always be picked by the stem, (and not pulled, as is generally done,) and placed at once in boxes. The stem is easily cut with the thumb or finger nail, avoiding any pressure of the berry by the fingers, as it will always rupture the cells more or less, and produce a damaged condition, which, though it may not show at the immediate time, will in a few hours, and injure both the fruit and the reputation of any producer, with careful buyers. Too careful handling of this fruit is not possible. For shipping, those berries which are

just colored all over are the best to use; and all such as have become fully ripe, or the least soft, should be sold in the market for home use, as they will not stand the jostle of carriage to any distance. A very few of such mixed in a box of those less ripe will often spread mould throughout the box, in a single day, especially when packed in crates, and closed from the air. I cannot recommend the practice of some, of placing a layer of the finest berries upon the face or top of the box. Let the facing be an honest representation of the entire box, and should it, from conditions in picking, be a little inferior, it will work no harm in a long run, as the consumer will be happily surprised to find the contents of the box better than the surface indicated. Always fill the boxes above the rim, for, with the easiest carriage and shortest road, they will settle, no matter how honest the filling at the packing grounds. No man, however careful, can place the soft fruits in boxes so closely as to prevent settling in transportation, without seriously injuring, if not ruining, the whole. Soft fruits will not bear the least pressure, even of that of the palm of the hand, and even in packing into the boxes it were better not to touch the berry with the hand at any time. It always pays well to grade the fruit into first and second classes. All sound and fair-sized and above should form the first, and sound and under-sized should form the second class. Small, imperfect and damaged berries, no matter how large, should be left out; and berries which, in picking, have separated from the calyx, partly or fully, should never be placed in boxes for shipping. They will not keep twenty-four hours during the hot weather which generally occurs during the ripening season.

RASPBERRIES AND BLACKBERRIES require the same care and management as the strawberry, with the exception that they are picked *from* the stem. They should be picked by carefully separating them from the stem with finger or thumb, and allowing them to drop into the palm of the hand, or directly into a box held close under the berry. Boxes of fruit of any class should be sheltered from wind and sun as soon as filled, as they suffer by exposure.

All classes of berries should be packed in pint or quart boxes, and put up in crates, holding twenty-four boxes. The boxes and crates should be thoroughly seasoned, and, when used, perfectly dry, as moisture in either germinates mould, followed by rot. No producer should be satisfied with simply getting his fruit into the market, but should feel a pride in placing it there in *such* a condition as is required either for safe shipping or to place upon retail stands for days, without serious deterioration. Dealers are always glad to pay for such careful handling, as their liabilities of loss are much less.

GOOSEBERRIES are less difficult to handle. To avoid the thorns, which are always sure to effect a lodgment in one's hands, an instrument, constructed similar to a small rake, having four or five long teeth or fingers, and a short handle, to the under side of which is attached a small sack, to receive the

berries, renders the work of gathering very easy and rapid. The teeth should be placed sufficiently close to hold all the large berries. As the bloom continues through several days, so the fruit varies in size; therefore with a second raking all berries of any value in the market will be gathered. With this method some leaves will also be raked into the sack. These should be blown out, and all wormy fruit carefully removed. This fruit should be marketed in clean baskets, covered, to protect it from dust.

The CHERRY, unlike the small fruits, ripens its fruit all at the same time, and not much advantage can be taken during its season to hold the crop on the trees to avoid a glut in the market. True, a portion can be picked when just tinted with color, and in a measure facilitate their disposition; but such fruit is not only unhealthy but unpalatable, as it attains to no degree of excellence until fully ripe. For such immature fruits dealers offer a proportionate price, and thereby establish a low rate at the beginning, which well-ripened fruit finds a hard struggle to raise. This fruit must be picked by the stem, the same as with the strawberry, and care used to avoid even starting the stem from the fruit, as any such severance produces a leakage of the juice, which soon ferments and contaminates frequently the whole box. Quart boxes are best suited for this fruit. Some dealers require that the top layer be faced; that is, all the stems turned down, so as to present a solid surface. This is only a matter of fancy, but has its admirers, and often captures trade when the ordinary method of packing will not. To the producer this affords the advantage of using inferior fruit without being readily detected. To the shipper it affords an advantage, as fruit so faced forms a more solid surface, and the boxes, when packed in crates, do not suffer so much from the jostling, so often ruinous in transportation, and from reckless handling of the employés of express companies.

PEACHES.—I have had no experience in marketing this fruit, but from observations, both in this State and others east of us, baskets of different sizes are conceded to be the best adapted to shipping purposes. The fruit should be picked with care while firm. All soft peaches should find a home market, as unfit for transportation. Never allow a ruptured, wormy, or the least specked, rotten or scabby specimen to go in. There is no money saved in such practice. Such may be carried to market and gotten rid of, but the price tells heavily in the column of profit-and-loss account; and surely the latter, if mixed with sound fruit.

PEARS.—Here we have a broad field for the application of intelligent practice. In careful management, with most varieties grown, we have some chance to use the market to our advantage. There need be no rush, or necessity of accepting low prices, on account of any glut or overstocked condition. They can be as easily managed as apples of the same season. They must be picked with stems; and to make their marketing easy, picking may begin as soon as seeds are brown, and either sold immediately to shippers, or, if intended for home market, carefully packed in half or one-

bushel boxes, lined with clean white paper, and closed up, to pass through a "sweat," which will generally occur inside of ten days, the time being longer or shorter, just in proportion to the mature or immature condition of the fruit at the time it is picked. By this process the hard and green fruit will have turned to a mellow and golden-yellow, and, with some varieties, a beautiful rose-tinted cheek, the whole covered with a delicate bloom. Shippers usually require the packing to be done in well-ventilated crates, generally holding one-third of a bushel, for the reason that by the use of these open crates they retain their firmness, and reach their destination in better condition for handling than in close boxes, and can be submitted to a sweat afterward, as desired. For home market, a portion of the crop can be safely allowed to remain until fully matured, but never to soften on the trees. These, when properly softened by the sweating process, afford all the true and luscious excellence peculiar to their class. The skin becomes thin and tender, and the juice increases in richness. It often pays well to wrap such matured fruit in soft paper, as practiced with lemons and oranges. This would seem quite tedious, yet can be very rapidly done. Merchants know the value of, and readily pay the highest price for such prepared lots.

APPLES.—This is the staple, and, as some state it, the democratic fruit of the American people; and to the handling of this class let us devote the balance of this report, as from its production nine-tenths of the revenue of all horticultural investments is derived. All classes, summer, autumn and winter varieties, must be taken from the tree with stem adhering, and undisturbed in its natural relations. No pulling should be allowed, as a strain produces rot in the cavity. The apple should be taken in hand, with the thumb resting on the base of stem; then by a turn of the apple over the thumb, it easily separates at the base, without injury; place in a basket hanging to a limb within easy reaching distance, and, when full, empty into a wagon bed, lined with hay, or into heaps under and in the shade of trees. Hands should follow the pickers immediately, to assort, in grades Nos. 1 and 2. Each grade should be composed of only sound fruit, the only difference being in size and color. All refuse or inferior and defective fruit should be sent to the cider mill. No matter how large and finely formed a specimen may be, if there is any breakage in the skin, or if it is wormy, reject it from either grade. Be not guilty of sending unsound and wormy fruit into the markets, any more than you would send stale and wormy meats. One is just as fit for food as the other, and do not allow yourself to sink so low, in your greed for gain, as to become a peddler of unwholesome and wormy fruit. I have said that hands should follow the pickers immediately, in case the fruit is placed in heaps in the orchard, to assort into grades, and secure it against exposure to our drying climate, as shriveling will begin as soon as separated from the tree, unless properly protected. The safest method is to carry at once from the orchard to packing rooms or cellar. Apples should never be pitched and tumbled about, but when-

ever handled care should be used to avoid all liabilities of bruising or breaking the skin. I am aware that it is difficult to find hands who will strictly obey such instructions, but any reckless man, who will not observe such requirements, should be dismissed at once. Summer and autumn varieties are generally of a more delicate character than winter, and will need rigid care in handling. Those for shipping purposes bear carriage best packed in ventilated boxes. Crates formed with board ends, and sides of laths about an inch apart, having a capacity of one bushel, or even one half-bushel each, are easily and cheaply constructed, give proper ventilation, are easily handled, and afford the buyer a chance to see the quality of the contents through the openings—which, to a retail dealer, buying of a wholesale or commission merchant, is very desirable. As all early varieties ripen rapidly during the intense heat of summer, and are not of long duration, their disposition must accordingly be rapid. In fruitful years, the orchardist finds a glutted market, and some difficulty in even *disposing* of his early varieties. He is driven to look abroad for a market, or lose a portion of his crop, if it is allowed to fully ripen before picking. Some advantage can be taken of their season. Picking can begin as soon as seeds are colored, and, in thus early beginning, the market season is prolonged. Fruit at this stage keeps better and bears transportation better than when riper, but its quality is none of the best.

Winter Varieties and Long Keepers: These should be assorted and packed in barrels as soon as taken from the trees, or carried into cool, dark cellars or store-rooms, and placed in shallow bins lined with paper, and when the bins are filled, covered with paper. Each variety should be kept separate, and arranged so as to be easily reached, according to the season in which they mature, and remain undisturbed until marketed. Apples so arranged and protected will endure an atmosphere at freezing (and such a temperature is desirable and preferable to any other) without any injury. I have always found that apples packed in bins not lined and covered as herein stated will wilt, although kept in a cool cellar.

If the crop is to be shipped in the fall, it should be assorted and packed in barrels, and closed up as soon as picked. A layer should be carefully placed at the bottom of the barrel, all facing stem-end down; then fill up the barrels to fully one layer above the rim; press down with screw or lever and close up with the head. The bottom end should be marked for opening. The pressing down of an over-fullness fastens the entire contents of the barrel, and prevents any chafing in transportation. If shipping from the bins in spring is desired, the same process is required. As fast as the barrels are filled from the bins, they should be headed up, as the disturbance and exposure to the atmosphere hasten rot more rapidly than at any time prior, while undisturbed in the bins. Of course, all the attention recommended at any time, in assorting and rejecting unfit fruit, applies to apples, no matter whether in autumn or spring handling.

There is a question indirectly connected with the handling of fruit which is worthy of investigation by this Society, viz.: Does it pay to hold an extensive crop of apples over for the chances of an advanced price in the spring?—or had it better be disposed of in the autumn at time of harvesting? With me, after years of experience in growing and marketing apples, there are many doubts as to the truth of an affirmative of the first part of this proposition. True, in extensive orchard districts there exists a formidable competition in autumn; but is it any safer to run the dangers from risks of rot, necessity of reassorting, etc., which would follow? And again, should every producer adopt such as a rule, would the advance be sufficient to justify such an enterprise?

IN CONCLUSION: No intelligent person passing through our markets will fail to be impressed with the beauty of a carefully-selected and handled lot of fruit. Such always finds admirers, and its attractive features are most inviting to trade; and none are more attractive than the open barrels of choice selected apples. This always serves to establish the reputation of the individual producer; and more, it shows up the productive resources of a State under the hand governed by intelligence. In it we read more than character of the variety: we determine the intelligence and character of the producer—a man proud of his pursuit and tasteful in his management, and all lovers of fine fruit will appreciate him. Another phase in actual life, and much to be regretted, is too commonly seen, viz.: a lot of the same variety of large, fine apples mixed with small, specked, bruised and wormy ones—a promiscuous quality; and here we read the character of a slothful, indolent and don't-care man—one whose farm "*don't pay*," whose children go in tattered clothes, slip-shod, and grow up in life with no pride for themselves nor others. Such were their parents before them, and they follow in their footsteps.

The pursuit of fruit-growing is one requiring close study and intelligent application, and in no department is it to be more rigidly applied than in the care and handling of the product from the tree to the market, for just in proportion to the care is the ultimate success.

DISTRICT REPORTS.

NORTHERN FRUIT DISTRICT.

The following counties have reported: Atchison, Cloud, Davis, Doniphan, Dickinson, Ellis, Jefferson, Jackson, Jewell, Lincoln, Mitchell, Pottawatomie, Republic, Riley, Shawnee, Saline, Washington, and Wyandotte.

WOOD GROWTH AS REPORTED.

Apples.—Extra in 15 counties, medium in 3.

Peaches.—Extra in 14 counties, medium in 4.

Pears.—Extra in 11 counties, medium in 3, no report from 4.

Cherries.—Extra in 7 counties, medium in 7, not reported in 4.

Well ripened in all the counties; earlier in five, at usual time in 10; late growth in 2. Several counties report second or autumn bloom of some varieties of apples and cherries.

CROP OF FRUIT.

Apples.—Heavy in 1 county, medium in 5, light in 6, very light in 4, none in 2.

Peaches.—Heavy in 10 counties, medium in 5, light in 1, very light in 2.

Pears.—Medium in 8 counties, light in 4, very light in 4, none in 2.

SOILS AND LOCATIONS MOST PRODUCTIVE.

Eleven counties report. In 7 counties, sandy loam has been most productive; in 2, clay and sand; in 2, no difference discernible.

LOCATION.

Thirteen counties report. Six, high land; 4, bottom land; 1, no difference; 2, sheltered lands; 5, northern slopes; 1, southern slopes; balance make no report.

DISEASES.

Ten counties report. Seven, twig-blight; 5, scab on apple and peach; 2, mildew on apples; 1, no diseases present.

GRAPE ROT.

Eighteen counties report. Five report it prevalent; 13 report none.

SMALL FRUITS.

Eighteen counties reported. All report strawberries successful; black-

berries successful in 17 counties, raspberries in 18, gooseberries in 17, currants in 12 (with shade).

Strawberries—*varieties successful*.—Fourteen counties report for Wilson's Albany, 3 for Col. Cheney, 2 for Charles Downing, 1 for Monarch of the West.

Blackberries.—Fifteen counties for Kittatinny, 6 for Lawton, 2 for Missouri Mammoth, 1 for Western Triumph.

Raspberries.—Eight counties for Doolittle, 12 for McCormick, 1 for Miami, 3 for Philadelphia, 1 for Ganargua, 3 for Turner.

Gooseberries.—Fourteen counties for Houghton, 3 for Pale Red, 2 for Mountain, 2 for Downing.

Currants.—Nine counties for Red Dutch, 2 for White Dutch, 3 for White Grape, 1 for Cherry.

THE CROP.

Strawberries.—The crop of strawberries has been heavy in only 2 counties, and medium in the others.

Blackberries.—Heavy in 9 counties, medium in the others.

Raspberries.—Heavy in 5 counties, medium in 9, light in only 1.

Gooseberries.—Heavy in 2 counties, medium in 13.

Currants.—Medium in 7 counties; in 5 counties scarcely any fruit, in 6 not tried sufficiently. Results prove conclusively the necessity of shade.

FORESTRY.

All the counties report remarkable success in the season's planting. Nine counties report the cottonwood most desirable; 8, the black walnut; 2, the box elder.

INSECTS.

Nine counties report the codling moth present, 5 report it prevalent; 17 report the apple and peach-tree borer present, 5 report it numerous; 3 report the raspberry borer present; 11 report the tarnish plant bug, and 2 report them very numerous; 4 report the tree cricket present, 7 report the rose chafer, 2 report the strawberry-leaf roller, 7 report the curculio, 1 reports the plum gouger.

NEW SEEDLING FRUITS.

Several very promising new seedling apples and peaches have originated in sections of this district, which are worthy of further culture and test. One county reports a valuable seedling pear, and one a valuable seedling apricot and raspberry.

CENTRAL DISTRICT.

Number of counties reported, 16, as follows: Anderson, Chase, Coffey, Douglas, Franklin, Harvey, Johnson, Linn, Lyon, McPherson, Miami, Morris, Osage, Reno, Rice, and Wabaunsee.

WOOD GROWTH.

Apples.—Reported extra in 10 counties, medium in 5, small in 1.

Peaches.—Extra in 10 counties, medium in 5, small in 1.

Pears.—Extra in 8 counties, medium in 7, small in 1.

Plums.—Extra in 8 counties, medium in 7, small in 1.

Cherries.—Extra in 6 counties, medium in 9, small in 1.

Thirteen counties report well-ripened wood, and earlier than usual. Several counties report a second or autumn bloom, and in one instance a second crop of apples attained to the size of crab apples.

CROP OF FRUIT.

Apples.—Heavy in 1 county, medium in 2, light in 11, non-bearing age in 2.

Peaches.—Heavy in 9 counties, medium in 6, non-bearing age in 1.

Pears.—Heavy in 1 county, medium in 7, light in 2, non-bearing in 6.

Plums.—Heavy in 6 counties, medium in 4, light in 2, non-bearing age in 4.

Cherries.—Heavy in 7 counties, medium in 5, non-bearing age in 4.

VARIETIES MOST PRODUCTIVE IN 1878, IN THE ORDER NAMED.

Apples.—Ben Davis, Maiden's Blush, Willow Twig, Carolina Red June, Jonathan, Missouri Pippin, Yellow Bellflower, Winesap, Lowell, Stark.

Peaches.—Crawford's Early, Stump-the-World, Heath Cling, Hale's Early.

Pears.—Bartlett, Duchesse de Angouleme, Vicar of Winkfield, Flemish Beauty.

Plums.—Wild Goose, Miner.

Cherries.—Early Richmond, common Morello.

DISEASES.

Eight counties report premature falling of fruit; 5, blight of apple; 4, scab; 2, mildew of apple and peach; 1, rotten-root to a fearful extent.

GRAPE ROT.

Seven counties report grape rot.

SMALL FRUITS PRODUCTIVE IN 1878.

Strawberries.—Eleven counties, Wilson's Albany; 2, Charles Downing; 1, Downer; 1, Kentucky; 4, Col. Cheney; 1, Green Prolific.

Blackberries.—Thirteen counties, Kittatinny; 5, Lawton; 2, Missouri Mammoth; 1, Western Triumph.

Raspberries.—Nine counties, Doolittle; 6, McCormick; 2, Smith's Ironclad; 2, Miami; 2, Turner; 1, Purple Cane.

Gooseberries.—Eleven counties report Houghton successful; 2, Pale Red; 1 each the Mountain and Downing; 1 reports the failure of all varieties.

Currants.—Five counties succeed with the Red Dutch; 1 with the White Dutch; 1 with the Grape; 1 with the Cherry. Four counties report shade and mulch a success, 3 report shade a success, and 4 report partial and total failure, when shade and mulch are not used.

FORESTRY AND ORNAMENTALS.

All counties report satisfactory success in 1878. Six counties report the cottonwood successful, 4 the black walnut, 5 the elm, 3 the box elder, 1 the Lombardy, 1 the honey locust, 3 the catalpa, 2 the ash, 1 the ailanthus, 1 the sweet chestnut, 1 Osage, and 1 coffee bean.

INSECTS.

Eleven counties report the codling moth present, 11 the apple-tree borer, 10 the peach-tree borer, 5 the raspberry borer, 6 the tree cricket, 3 the tarnish plant bug, 2 the strawberry-leaf roller, 6 the rose chafer, 13 the curculio. The last has been very destructive to the early peaches in 6 counties. Several report this insect as severe on the Wild Goose variety as upon any other plum.

Fruit prospects for 1879 are very promising. The theory that such varieties as failed to fruit in 1877 would be most productive in 1878, has not proved correct.

Shade and mulch for the currant is a new practice with many, but is proving successful, and encourages fruit growers to plant more of this class.

The cottonwood is reported in some sections, on high prairie, as failing with age, as is also the Lombardy poplar. Plantings of evergreens have been quite successful during 1878, and give encouragement to lovers of ornamentals.

The successes in planting in 1878 of all classes of trees and fruit-producing plants have strengthened the confidence of the people in this district, and extended efforts will be made in 1879.

SOUTHERN FRUIT DISTRICT.

Made up from reports of 16 counties, viz.: Allen, Bourbon, Butler, Crawford, Cherokee, Cowley, Chautauqua, Elk, Greenwood, Labette, Montgomery, Neosho, Sedgwick, Sumner, Wilson, and Woodson.

WOOD GROWTH.

Apples.—Extra in 9 counties, medium in 6, in 1 no report.

Peaches.—Extra in 9 counties, medium in 5, light in 1.

Pears.—Extra in 7 counties, medium in 7, in 2 no report.

Plums.—Extra in 6 counties, medium in 8, in 2 no report.

Cherries.—Extra in 7 counties, medium in 8, in 1 no report.

Ten counties report earlier ripening of wood than usual, 2 counties not earlier, 9 late and second growth, 6 report autumn blooming.

CROP OF FRUIT.

Apples.—Heavy in 2 counties, medium in 5, light in 8, in 1 no report.

Peaches.—Heavy in 6 counties, medium in 7, light in 3.

Pears.—Heavy in 4 counties, medium in 3, light in 5, none in 4.

Plums.—Heavy in four counties, medium in 7, light in 4, none in 1.

Cherries.—Heavy in 4 counties, medium in 9, light in 3.

The following varieties of apples are reported productive, and in the order named: Ben Davis, Gilpin, Rawles Genet, Maiden's Blush, Willow Twig, Winesap, Carolina Red June.

DISEASES.

Blight reported in 3 counties, scab of apple and peach in 4, peach rot in 5.

GRAPE ROT.

Grape rot is prevalent in 5 counties; 9 are exempt.

SOILS FOR ORCHARDS.

Five counties favor sandy loam, 2 limestone lands, and 4 any well-drained land.

LOCATIONS.

Most reporters prefer high northern or eastern slopes.

SMALL FRUITS—CROP OF 1878.

Strawberries medium in 10 counties, blackberries heavy in 9, raspberries medium in 15, gooseberries heavy in 15, currants fruited in the shade in 10, failed in 4.

Strawberries—varieties successful.—Wilson's Albany in 14 counties, Chas. Downing in 2.

Blackberries.—Kittatinny in 13 counties, Lawton in 9.

Raspberries.—McCormick (*syn.* Mammoth Cluster) in 8 counties, Doo-little in 9, Miami in 2, Philadelphia in 3.

Gooseberries.—Houghton in 11 counties, Pale Red in 2, Downing in 1.

Currants.—Red Dutch in 9 counties, cherry in 1.

FORESTRY.

All counties report success in 1878. For timber, the cottonwood, black walnut, red elm, ash, and catalpa rank in the order named.

INSECTS.

Codling moth reported in 6 counties, apple and peach-tree borers in 11, raspberry borer in 3, tree cricket in 4, tarnish plant bug in 3, strawberry-leaf roller in 3, rose chafer in 8 light, curculio in 11 destructive.

REMARKS.

Crop of apples was light in Butler, Crawford, Sumner and Montgomery counties, on account of trees being too young to produce a full crop.

In Cowley and Neosho counties the wild varieties of plums were heavily productive, and led all others.

Early peaches were seriously injured by curculio in most counties.

Small fruits have succeeded wherever well mulched.

Currant culture is growing in favor, under the treatment of shade and mulch, or where planted on the east or north sides of fences.

There is an increasing disposition in this district to plant more extensively, and continue testing varieties under varied methods of treatment.

COUNTY REPORTS.

The following reports have been made in answer to Circular No. 8, a copy of which is given in the following:

(Circular No. 8.)

SECRETARY'S OFFICE, KANSAS STATE HORTICULTURAL SOCIETY, }
LAWRENCE, October 1, 1878.

DEAR SIR: By request of the President, I tender you the appointment of Vice President of the Kansas State Horticultural Society for your county. The duties of said office are defined in the following article of the constitution:

"ART. VII. There shall be a vice president annually appointed in each county in the State, whose duty it shall be to organize local horticultural societies in their respective counties whenever practicable, to report to each annual meeting on the general subject of horticulture, and to look after the interests of horticulture in their respective localities."

The following series of questions are submitted as a basis of your investigations and report, and any matters of interest to horticulture, other than those contained in these questions, should be included in your report, and will receive careful consideration by the Society.

APPLES, ETC.

FIRST DIVISION.*—This includes apples, peaches, pears, plums, cherries, and grapes.

First—What has been the wood growth of the following classes of trees, etc., during the year, with reference to the extent and condition? Apples, peaches, pears, plums, and cherries.

Second—Did the growth ripen and the terminal buds form earlier in the season than usual?

Third—Did any varieties make a late or second growth? If so, what varieties?

Fourth—Has the crop of fruit been light, medium, or heavy? Apples, peaches, pears, plums, cherries.

Fifth—What varieties have borne a good crop this season?

Sixth—What varieties bore a crop during both years, 1877 and 1878?

Seventh—Have such trees as bore a crop of fruit this year generally been such as failed in 1877?

Eighth—What kind of soil has been the most productive this season?

Ninth—What kind of location has been the most productive this season?

Tenth—To what cause do you attribute the non-productiveness of leading varieties this year?

Eleventh—Have any diseases—as *twig-blight*, *rotten-root*, among trees, or *scab*, *mildew*, *rot*, and *premature dropping* of the fruit—appeared this season?

Twelfth—Have you discovered any prevention or successful remedy for the above-mentioned diseases?

GRAPE ROT.

The Department of Agriculture at Washington, D. C., having undertaken, by an investigation, to determine the cause or causes of the rot of the grape, has sent out the fol-

* All dates in questions refer to 1878, unless otherwise stated.

lowing circular, to which I would call your attention, and urge that as far as possible you assist in this work by answering the questions in said circular:

DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C., June 28, 1878.

DEAR SIR: From the investigations last season on the *grape rot*, it is thought that the rot may be a fermentation caused by the fungus known as the *Torula Sacchari* (or *cerevisia*), or "yeast or vinegar plant."

This fungus requires, for its germination and growth, high temperature, much moisture, and contact with some saccharine or albuminous substance. From all the indications, the grape is thought to be in the best condition for the attack, and most susceptible to this disease, at the time of the formation and hardening of the seeds, as the vine at this period secretes the substances most inviting to this fungus.

To arrive, therefore, at better and more satisfactory conclusions in this connection, you are earnestly and respectfully requested, from as careful observations as possible, to answer substantially the following questions.

Respectfully, WM. G. LEDUC, *Commissioner*.

QUESTIONS.

First—Is the grape attacked by rot at any other period of its growth than that known as the time of "forming and hardening of the seed?" If so, at what other stages of its growth, and in what proportion of instances, and in what proportion of the crop?

Second—What is the degree of temperature of the air at which the rot commences, and under what temperature does it flourish or decline?

Third—Will the moisture of the ground be sufficient to generate and support the rot, without also excess of moisture in the atmosphere?

Fourth—What is the locality, exposure, drainage, soil, etc., of the vineyard observed; the variety and age of the vines, mode of sheltering the canes, etc.?

SMALL FRUITS.

SECOND DIVISION.—This includes strawberries, blackberries, raspberries, gooseberries, and currants.

First—Have the following classes been productive, and what variety leads? Strawberries, blackberries, raspberries, gooseberries, currants.

Second—What special means have been used to increase productiveness and quality, as shelters (summer or winter), manuring or cultivation? Strawberries, blackberries, raspberries, gooseberries, currants.

Third—Has shade been tried with culture of the currant? What results?

NOTE.—In many locations, that desirable fruit, the currant, has been made satisfactorily productive by the use of shade, manure and mulching, where under ordinary culture it fails. Shade can be obtained by planting on the north side of a stone wall or common board fence, also on the north side and in the shade of tops of trees. The first method is preferred.

As this fruit is quite fickle in its adaptation to our soil and climate in many sections of our State, this Society is very anxious that experiments should be made from time to time for the purpose of determining, if possible, a successful method for its culture under our variable conditions.

FORESTRY AND ORNAMENTALS.

THIRD DIVISION.—*First*—Has the planting of forest and ornamental trees been a success in your county the present season?

Second—What varieties have failed, and to what do you attribute the cause?

Third—Do any of the first planting seem to be failing as they age?

Fourth—What one variety of forest trees proves the most desirable for all purposes?

Fifth—Is there an increasing disposition among your people to protect their homes with belts of trees, and ornament around the dwelling with trees, shrubs and flowers?

Sixth—Your attention is most earnestly invited to the recommendations of this Society at its Eighth Semi-Annual Meeting, held at Garnett, Anderson county, June 19th and 20th, 1878, viz.: "That the boards of school districts be urged, through the county vice presidents, to adopt necessary measures to plant the school grounds to groves of trees for shade in summer and shelter in winter, and so ornament the house surroundings as to make the whole a place attractive to the pupils; also, to urge upon the members of

the school districts the importance of an introduction of a course of lessons in practical horticulture in our common schools."

INSECTS.

FOURTH DIVISION.—First—Is the codling moth prevalent among your apples?

NOTE.—This insect is the worm found in and about the cores of apples, and of late years in the pear, and is spreading westward quite rapidly.

Second—What means are being used for protection from and destruction of this insect?

Third—Borers (round and flat-headed apple-tree, peach-tree, and raspberry borers). Are these enemies prevalent, and has the latter species been discovered in the canes of raspberry and blackberry plants?

NOTE.—The first indication of this last insect is that of the growing canes wilting and then dying. Supposed, by the inexperienced, to have been partly separated at the ground by winds. Upon examination, the worm will be found in the pith or heart of the crown of the plant, and sometimes in that of the base of the new and growing cane.

Fourth—What have been your remedies for the attacks of these insects?

Fifth—Have you discovered any of the following noxious insects infesting your fruit or trees, etc.?

1st. TREE CRICKET.—This insect is some smaller and more slender than the common house cricket, light-green color during midsummer, but turning to a pale brown later in the season, and is very quick in its movements. The injury it does is in cutting out small cavities on the surface of apples, peaches, pears and quinces, and by this causing rot, which rapidly ruins the fruit. No practical remedies have as yet been invented or discovered to rid orchards of this one of the worst of enemies.

2d. TARNISH PLANT BUG.—This is a very small, brownish-yellow or a light-rust-colored insect, with soft wings, which attacks all classes of early vegetation. The injury done the fruit grower is its puncturing the unopened blossom buds, and causing them to perish as if killed by frost. This insect often accumulates in large numbers upon the under side of the leaves of turnips, beets, and other late-growing vegetables in the field and garden late in the autumn, and hibernates in swarms under rubbish, all of which should be burned before spring for their destruction.

3d. STRAWBERRY-LEAF CRUMPLER.—This enemy to strawberry culture has become quite numerous in some sections of our State. It is a small, slender, pale-green worm, extremely quick to escape when disturbed. It knits the edges of the leaf together to form a shelter or dwelling place while it devours the filament. *Remedy*: The plants should be carefully examined during the summer, and all leaves so infested gathered and burned.

4th. ROSE CHAFER.—This beetle is about one-third of an inch in length, slender form, and of an whitish-yellow color. It appears in May, and devours the foliage of most classes of trees and shrubs. *Remedy*: They are easily jarred from plants into buckets of boiling-hot water or upon pans of live coals, for their destruction. Have been very numerous and injurious in some of the southern counties of our State during the past six years.

5th. CURCULIO.—This is the worm commonly found in the plum, and of late years in the peach in some localities. In many instances it is the cause of the rot of the fruit. It passes to the ground in the fruit which it causes to drop, and, leaving the fruit, enters the ground, there to change to a small snout beetle, which can always be told by its having two "bumps" on its back. The general remedy is to spread a white cloth under the tree, and, by a sudden jar each day, they will drop into it, and are easily killed. Of more recent years, the practice of smoking the trees with burning coal tar has been adopted, and is claimed to be successful, by keeping the parent (which deposits her eggs in the fruit) away. The smoking should be renewed immediately after every rain.

GENERALITIES.

Please to furnish this office with a full statement of the origin, character and locality of any new seedling fruits deemed worthy of propagation, with the post-office address of the party originating them.

Please furnish me with a complete list of the varieties of all classes of fruit planted in your county since first settlement, which may have come to your knowledge since last year's report: Apples, peaches, pears, plums, cherries, strawberries, blackberries, raspberries, gooseberries, currants.

I desire your report on the preceding inquiries by December 1st, 1878.

Respectfully,

G. C. BRACKETT, *Secretary*.

The nomenclature of the American Pomological Society's published catalogue has been adopted in the make-up of these reports; and for such names as are not included in that catalogue, Downing's "Fruits and Fruit Trees of America" has been accepted as authority. All synonyms have been discarded, or given as such.—SECRETARY.

 ALLEN COUNTY.

BY H. E. VAN DEMAN, GENEVA; C. C. KELSEY, HUMBOLDT.

Wood Growth of the apple, peach, pear, plum and cherry, large; well matured—earlier than usual.

Crop.—Apples, light; peaches and pears, medium; plums, a few of the Wild Goose and native varieties; cherries, heavy.

Varieties Fruiting in 1878.—Apples: Ben Davis, Gilpin, Limber Twig, Rawles Genet, Jonathan, Yellow Bellflower, Missouri Pippin, Maiden's Blush, Wine, Red Astrachan, Carolina Red June, Summer Rose, Willow Twig.

Varieties Bearing both years, 1877 and 1878.—All the foregoing except the Yellow Bellflower. Orchards upon dry upland, close planted and protected, have been the most productive. Cause of reduction in crop, climatic—heavy winds and rainfall during blooming period.

Diseases.—None of a damaging character.

Grape Rot.—Varieties: Isabella suffered most, and Concord next. Begins at a temperature of 90° and ceases at 70°, if atmosphere and soil are dry. Thorough drainage is important as a preventive.

Small Fruit Crop, varieties productive.—Strawberry: Wilson's Albany, Monarch of the West. Blackberry: Kittatinny, Lawton. Raspberry: McCormick, Doolittle. Gooseberry: Houghton. Currant: Red Dutch (when shaded by fence). All classes should be manured and mulched.

Forestry and Ornamentals, plantings successful.—Varieties leading, gray ash, soft maple and honey locust. Lombardy poplar and cottonwood fail

with age on our uplands. Cause, poor soil. The disposition to plant for shelter and ornamentation is increasing.

Insects.—The codling moth (apple worm) is present. Means for protection—none used. Borers—Round and flat-headed apple tree and peach not as prevalent as usual. Box-elder trees have been seriously damaged by the flat-headed species. Remedy, the knife. Rose chafer, less than in former years; curculio, numerous in plums and peaches.

New Seedling Varieties of Fruit.—Apples, by S. L. Edwards; peaches, by S. M. Irwin and H. E. Van Deman.

Varieties of Fruit Planted in the County not Reported for 1877.—Apples: Colvert, Martin. Peaches: Alexander, Amsden, Early Louise. Strawberries: Monarch of the West. Blackberries: Snyder (not valuable).

ANDERSON COUNTY.

BY A. A. ADAMS, GARNETT.

Wood Growth.—Apple, peach, pear, plum and cherry, medium; well matured—earlier than usual.

Crop.—Apples, light; peaches, heavy, but rendered almost worthless by curculio; pears, an average, and of fine quality; plums, same conditions prevailed as with the peach; cherries, light.

Varieties Productive.—Apples: Ben Davis, Willow Twig, Maiden's Blush, Yellow Bellflower, Lowell, Missouri Pippin, Hewes's Crab. Pears: Bartlett, Flemish Beauty, Duchesse de Angouleme, Vicar of Winkfield. Plums: Wild Goose. Cherries: Early Richmond, common Morello.

Varieties Productive both years, 1877 and 1878.—Apple: Missouri Pippin, Willow Twig, Lowell, Hewes's Crab. Pear: Bartlett. Do not think that the productiveness of varieties in 1878 is attributable to any failures in 1877. Orchards upon a red or gray limestone upland, well sheltered, have been the most productive. Cause of reduction in crop, severe freezing of the blossoms.

Diseases.—Rotten-root prevalent, and seriously damaging, caused by extreme atmospheric changes during growing season.

Small Fruits, varieties productive.—Strawberries: Wilson's Albany, Chas. Downing. Blackberries: Kittatinny. Raspberries: Doolittle, McCormick. Gooseberries: Houghton. Currants: Red Dutch, Cherry. Clean culture in rows, manuring and mulching, summer and spring clipping of the canes of blackberries and raspberries, partial shelter of the currant from sun and wind, secures satisfactory results.

Forestry and Ornamentals.—Planting successful; very few have failed, such only from carelessness. The balm of Gilead fails at four to six years' age. There is an increased disposition to plant ornamental and shelter trees.

Insects.—Codling moth prevalent in apples. For their destruction, turn hogs into the orchard grounds, and protect all parasitic insects. Borers numerous, except the raspberry species. The flat-headed apple-tree borer attacks the elms. Remedy: Cold steel, with good supply of back and elbow grease. Tree crickets—have noticed their work only. Rose chafer, very few present this year. Curculio, numerous, and rendered a heavy peach crop nearly worthless.

ATCHISON COUNTY.

BY J. W. FISHER, NORTONVILLE.

Wood Growth.—Apple, good; peach, heavy—very healthy; pear, most trees have failed from blight; plum, good; cherry, heavy, fine condition, all matured earlier than usual.

Crop.—Apples, light; peaches, heavy; pears, where trees were healthy, bore heavily; plums, light; cherries, heavy.

Varieties which Fruited heavily.—Apples: Winesap, Rawles Genet, Cooper's Early White, American Summer Pearmain. Peaches: All budded varieties bore well. But few varieties which bore heavily in 1877 fruited in 1878. High and northwest slopes, having a clay and sandy soil, have proven most productive.

Diseases.—Twig-blight, rotten-root among trees, scab, mildew, rot and premature dropping of the fruit, are all present in this county. Prevention and remedy: Good drainage, by opening a furrow with plow on each side of rows of trees, etc., removing all diseased limbs and bark as soon as discovered.

Grape Rot.—Excessive moisture on flat, loamy soil will generate and support rot.

Small Fruits, varieties tested.—Strawberry: Col. Cheney leads; crop rather light, caused by excessive rains. Blackberry: Kittatinny, crop enormous. Raspberry: Philadelphia and Black Caps bore heavily. Gooseberry: Houghton, light. Currant: White Grape and Red Dutch, light crop.

Means used in Culture.—Strawberry: Light cultivation; remove all runners and mulch. Blackberry: Summer clipping of canes, and heavy mulching in winter with stable manure. Raspberry: Same as for blackberry, with cultivation in summer. Gooseberry: Heavy pruning and mulching. Currant: Plant on the north side of a wall or fence; prune, mulch heavily, and cultivate.

Forestry and Ornamentals.—Planting has been successful with all classes, even evergreens, when mulched. Some varieties fail with age. The cottonwood ranks first among soft-wood and black walnut among hard-wood varieties. There is an increasing disposition to plant large belts of maples,

cottonwoods and elms, and large numbers of evergreens have been set in the past few years.

Insects.—The codling moth has become numerous in neglected orchards. Borers, both apple and peach-tree species, have become very troublesome in some orchards. Remedy and protection: Applications of tar have been found effective; unleached ashes around the base of the tree have been tried with good effect. Tarnish plant bug has appeared in small numbers.

Varieties of Fruit Planted.—Not reported for 1877. Peaches: Bates's Mammoth, Amsden, June, Alexander, Heath Cling. Plums: Wild Goose, Early Washington. Cherries: Spray's Mammoth, Napoleon Wax.

BOURBON COUNTY.

BY J. D. MANLOVE, FORT SCOTT.

Wood Growth.—Apple, peach, plum and cherry, large, and matured ten days earlier than usual; pear, good. Late or second growth of many varieties—White Winter Pearmain most.

Crop.—Apples and peaches, medium; pears, heavy, and of superior quality; plums, medium, (none but Wild Goose); cherries, medium—May Duke heaviest.

Varieties Fruiting.—Apples: Lowell heaviest, Ben Davis, Red Astrachan. Peaches: Hale and Crawford's Early. Plums: Chickasaw varieties.

Varieties Fruiting both years, 1877 and 1878.—Apple: Lowell, Ben Davis, Willow Twig. Plum: Chickasaw (regular bearers). The crop for 1878 was not the result of varieties failing in 1877. Orchards planted on upland with northern slope, well drained, have been the most productive. Cause of not fruiting this season, excessive rains at fertilizing period.

Diseases.—Scab on some varieties of apples.

Grape Rot.—Appears some years earlier than others; most extensive and rapid during close, damp and hot spells. Vines are healthy in locations well ventilated. Moisture in the ground will not alone generate and support rot, unless a saturation continues through a long period, in which condition the roots may become diseased and influence the fruit. One vineyard, planted in 1866, on deep loam, each row underlaid with bones and top soil mixed, plowed once each season, is yet healthy; has been affected with rot only three years in the time, and seriously only two years.

Small Fruits, varieties productive.—Strawberries: Wilson, Charles Down-

ing. Blackberries: Lawton, Kittatinny. Raspberries: Black Caps, Philadelphia. Gooseberries: All kinds; no rot or mildew. Currants: On north side of a fence. Strawberries, blackberries, raspberries and gooseberries require good culture and mulch. An application of coal ashes and well-rotted manure helps the gooseberry.

Forestry and Ornamentals.—Planting has been successful. Cause of any failure, neglect. Catalpa is quite popular. Soft maple will be discarded, because of its liability to attacks of flat-headed borers.

Insects.—Codling moth is prevalent, and much more numerous near Fort Scott than in remote parts of the county. Coal-tar smoke has been used as a protection of the fruit. Borers of all species except the raspberry are plenty and troublesome. Remedy: Knife and probe. Tree crickets are present, but not numerous; tarnish plant bug is very damaging; strawberry-leaf roller, troublesome; rose chafer not present this year; curculio destroys all plums except Chickasaw varieties, and damages peaches.

BUTLER COUNTY.

BY WILLIAM H. LETSON, BENTON.

Wood Growth.—Apple, peach and pear, heavy; plum and cherry, medium, and well matured.

Crop.—Apples and pears, light, as trees are young; peaches, very heavy; plums, the Miner, good; cherries, good.

Diseases.—None but rot of peaches.

Small Fruits.—Strawberries, productive, first crop; blackberries, heavy crop; raspberries, medium; gooseberries, light; currants, some black English, fine. Shade has been tried to some extent with the currant, and proves a benefit.

Forestry and Ornamentals.—Planting a general success. For forest, the cottonwood is the most desirable. There is an increased disposition to plant these classes.

[A horticultural society has been recently organized in this county, which will furnish facilities for a more correct report hereafter.]

CHASE COUNTY.

BY J. W. BYRAM, CEDAR POINT.

Wood Growth.—Apple, peach, pear, plum and cherry, very fine, and matured at usual time.

Crop.—Apples, light; peaches, medium; pears, very few trees bearing; plums, light; cherries, medium. (Orchards all young).

Varieties Producing Crop in 1878.—Apple: Missouri Pippin, Winesap, Ben Davis, Rawles Genet, Rambo, White Winter Pearmain, Jonathan, Swaar. Orchards planted on high prairie land, having a north and northeast slope, have been most productive.

Diseases.—Only premature casting of the fruit.

Grape Rot.—None.

Small Fruit, varieties productive.—Strawberry: Wilson; light crop. Blackberry: Kittatinny; very heavy crop. Raspberry: Smith's Iron-Clad; very heavy crop. Gooseberry: Light crop; even wild varieties failed. Currant: None grown.

Forestry and Ornamentals.—Plantings successful, and no varieties have failed. Varieties most desirable in the order named: Cottonwood, box elder, red elm, coffee bean, ailanthus. A decidedly increasing disposition among the people to plant for ornamentation and shelter.

Insects.—Codling moth present, but not numerous. Borers—Apple and peach, a few present. Remedy: Knife and probe. Tree cricket, tarnish plant bug and strawberry-leaf roller have not been noticed. Rose chafer—very few present. Curculio ruined plum crop.

CHAUTAUQUA COUNTY.

BY A. ELLIS, ELK CITY.

Wood Growth.—Apple, peach, pear, plum and cherry was large in the fore part, but light in the latter part of the season, and matured early.

Crop.—Apples and cherries, medium; peaches and plums, heavy; pears, light.

Varieties Producing a Good Crop in 1878.—Apples: Yellow Bellflower, Ben Davis, Willow Twig, Red and White Winter Pearmain, Jonathan,

Grimes's Golden, Rome Beauty, Gilpin, Winesap, Rawles Genet. All the foregoing fruited in 1877, and such as bore heavily that year repeated in 1878. Soil most productive, sandy or gravelly loam.

Diseases.—Only scab on the fruit of the White Winter Pearmain.

Grape Rot.—Small specks appeared when the fruit was quite small, and increased with the growth of the fruit. Cause—Continued rains and a humid atmosphere. Vineyards observed, near eastern slope, at the foot of a sandstone bluff; also, a southern slope, with sandstone bluff in the rear. No special drainage in either case.

Small Fruits, varieties tested.—Strawberries: Colonel Cheney and Wilson's Albany are productive. Blackberries: Lawton and Kittatinny equally productive. Raspberries, gooseberries and currants not successful.

Forestry and Ornamentals.—Planting has been successful. Red elm leads. A few are ornamenting their house lots.

Insects.—Borers have been found in raspberry and blackberry canes and peach trees; the flat-headed species only in decaying trees. Strawberry-leaf crumpler has been found in a few instances; also, the rose chafer. Curculio has been very damaging to plums and peaches.

Varieties of Fruit Planted, not Reported in 1877.—Apples: Haskell's Sweet, Golden Sweet, Bailey's Sweet, Rambo, Autumn Sweet, Fall Wine, Tetofsky, Fallawater, Shockley, Lawver, Cooper's Early White, Talman's Sweet, Baldwin, Missouri Pippin, Newtown Spitzenberg, Rawles Genet, Buckingham, Nickajack, Red Cathead, May, Stark, Kansas Keeper.

CHEROKEE COUNTY.

BY N. D. INGRAHAM, BAXTER SPRINGS.

Wood Growth of the apple, peach and pear strong in fore part, and light in latter part of the season, caused by autumn drouth. Plum and cherry medium; all matured earlier than usual. Second growth occurred with Early Richmond and Morello cherries, followed with late blossoms.

Crop.—Apples, peaches, pears, plums and cherries, light. All classes set heavily, but dropped, caused by rapid wood growth and heavy rains during the early part of the season.

Varieties which Produced a Good Crop in 1878.—Apples: Maiden's Blush, Russets, Fallawater, Smith's Cider, Ben Davis. Peaches: Early Crawford, Yellow Alberge, Red Rareri, Snow.

Varieties which fruited both 1877 and 1878.—All of the foregoing, and staple varieties generally, but the yield was light.

Location and Soil.—The most exposed places, and light, sandy soils, having a gravel subsoil, have been the most productive.

Diseases.—None have appeared.

Grape Rot has appeared in all stages of growth of the fruit, and caused an entire failure in crop.

Vineyards under Observation.—On high, rolling land, with variety of slopes; soil sandy, clay loam, gravel subsoil, well drained; leading varieties; age, six to eight years; trained to stakes and wire trellises; moderate pruning. Could see no difference in results—all similar.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, Large Early Scarlet, Kentucky, French Seedling, productive. Blackberries: Lawton and Kittatinny, productive. Raspberries: Doolittle, McCormick, productive. Gooseberries: Pale Red, Downing, natives, productive. Currants: But few grown; succeed with shade and mulch.

Means used in Culture.—Strawberries, manure and mulch; blackberries, raspberries and gooseberries, manure only.

Forestry and Ornamentals.—Have been planted generally for ornament; some few for timber belts and shelter for stock. Have been successful. Varieties failing: Soft maple, by splitting and attacks of borer. Evergreens, except native varieties, suffer by hot and dry spells. Variety preferred: Red elm; it is the true American shade tree. Our people generally ornament their house lots as fast as practicable.

Insects.—The rose chafer is troublesome on prairie farms only. The curculio is troublesome.

CLOUD COUNTY.

BY C. H. SHEFFIELD, GLASCO.

Wood Growth.—Apple, heavy; peach, good; pear and cherry, very good; plum, medium. All matured earlier than usual.

Crop.—Apples, peaches, plums and cherries, heaviest yet raised; pears, heavy for the few bearing trees.

Varieties Productive.—Apples which have done the best this year are in the order named: Ben Davis, Jonathan, Winesap, Cooper's Early White. The Ben Davis, Jonathan and Winesap fruited both years, 1877 and 1878. The crop of 1878 was not the result of varieties failing to fruit in 1877. The most productive apple orchards are on a gently-undulating prairie, four miles from native timber, surrounded by peach trees, on a rich loam, with clay subsoil.

Diseases.—Have extensively canvassed the county this year, and fail to find any unhealthy indications among fruit trees.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany and Nicanor are most productive. Blackberries: Kittatinny and Missouri Mammoth, very productive. Raspberries: McCormick is productive. Gooseberries: Houghton and Mountain are productive. Currants: Red Dutch, moderately productive. Means used in the culture of blackberries, raspberries and gooseberries, very heavy mulching. Currants planted on north side of a stone wall or high board fence, and mulched, are remarkably successful; fail in exposed places.

Forestry and Ornamentals.—Planting a success; none have failed unless neglected. Cottonwood proves the most desirable variety for all purposes. There is a decided disposition to plant trees, etc., for shelter and ornamentation.

Insects.—Borers are plenty in apple and peach trees only. Prevention—Induce healthy wood growth, and bank around the bodies of the trees with marl or limestone deposit during the period of oviposition. Remedy: After they have entered the tree, remove with knife and probe. Tarnish plant bug and rose chafer have been troublesome this year.

New Seedling Fruit.—Peach—a very promising variety.

Varieties of Fruit Planted, not Reported for 1877.—Apples: Cooper's Early White, Maiden's Blush, Rawles Genet, Fallawater, Yellow Bellflower. Blackberries: Kittatinny, Missouri Mammoth. Raspberries: McCormick, Turner, Philadelphia, Brandywine, Davidson's Thornless. Gooseberries: Mountain, Houghton, Downing, Smith's. Currants: Red Dutch, White Grape.

COFFEY COUNTY.

BY C. H. GRAHAM, LEROY.

Wood Growth.—Apple, peach, pear, plum and cherry good, and matured early.

Crop.—Apples light; peaches and cherries medium; pears fair.

Varieties Fruiting this Year.—Yellow Bellflower, Pickard's Reserve, Gilpin, Newtown Pippin. The varieties fruiting this year were generally such as failed in 1877. Cannot discover any difference in soils. Orchards located on the north side of timber tracts are most productive. Cause of non-productiveness of varieties this season, cold rains.

Diseases.—The twig-blight—largely among Winesap trees—and premature casting of fruit, prevailed.

Small Fruits, varieties productive.—Strawberries: Not productive. Black-

berries: The Kittatinny productive. Raspberries: The common varieties productive. Gooseberries: The common varieties productive.

Forestry and Ornamentals.—Planting has generally been a success. There is an increased disposition to plant these classes of trees, etc.

Insects.—Codling moth prevalent; borers quite prevalent; tree cricket prevalent; rose chafer, a few present; peaches much damaged by curculio.

COWLEY COUNTY.

BY JAMES CHRISTIAN, ARKANSAS CITY.

Wood Growth.—Apple, peach, plum and cherry, very good, and matured at the usual time.

Crop.—Apples, light; peaches, medium. Early varieties of the peach have done well; the late ones were generally a failure. Plums, native varieties heavy; cherries very light. The orchards in this county are quite young, and only a few have fruited for the first time. Location and soil: Generally low or level lands, having a clay subsoil and limestone base, are most productive.

Diseases.—None observed.

Grape Rot.—None observed. The vineyards observed are on rather high, sandy land.

Small Fruits.—Strawberries: But very few planted. Blackberries, raspberries and gooseberries have done well. Currants: None grown.

Forestry and Ornamentals.—Very few have been tried. The cottonwood proves the most desirable variety.

Insects.—None observed.

CRAWFORD COUNTY.

BY THOMAS PING, GIRARD.

Wood Growth.—Apple, peach, pear, plum and cherry all made a healthy growth. Some varieties made a second growth, and blossomed the second time.

Crop.—Apples, light; peaches, heavy—early varieties destroyed by worms, late ones good and sound; pears, light, and good quality; plums, light; cherries, medium.

Location and Soil.—Southeast slopes, and red or black soil, productive.

Causes of reduced fruitage, wind, hail and severe storms. Unsheltered orchards produced lightest crop.

Grape Rot is liable to occur at any time during the summer. It flourishes in warm, wet weather, and ceases in cool, dry weather. Do not think moisture in the ground alone will generate and support the rot. Vineyard observed, on rolling land; rows run north and south, with good drainage, well cultivated, well trimmed; no shelter except from winds. For many years the rot has been damaging in this vineyard.

Small Fruits, varieties leading.—Strawberry: Wilson. Blackberry: Lawton. Raspberry: Doolittle. Gooseberry: Houghton. Currant: Red Dutch.

Means Used in Culture.—Strawberries—Manured and cultivated in summer, and mulched in winter. Blackberries—Manured, good cultivation, and heading back of the canes, when grown three or four feet, in summer. Raspberries, well cultivated, on a dry, rich soil, are very profitable. Gooseberries, on well-manured, drained land, are successful. Currants, shaded on the south, well manured and cultivated, with drainage, succeed.

Forestry and Ornamentals.—Planting has been a success. Beach and ash have been ruined by attacks of worms, and some trees fail with age. The most desirable forest tree is the black walnut.

Insects.—Codling moth has not yet appeared. Borers—None but those in peach trees. Protection—Coal ashes thrown around the base, and tansey grown around the trees, are a sure preventive of the attacks on peach trees.

DAVIS COUNTY.

BY WM. CUTTER, JUNCTION CITY.

Wood Growth of the apple, peach, pear and plum has been strong, and continued late; that of the cherry medium, and well matured.

Crop.—Apples, light to medium; peaches, good in high, sheltered places—on low lands, light; plums, light; cherries, medium.

Varieties Bearing both years, 1877 and 1878.—Apples: Ben Davis, Wine-sap, Jonathan, Rawles Genet, Gilpin, Maiden's Blush, Woodbridge, Fameuse, Gramar's Pearmain, Early Harvest, Fulton and Duchess of Oldenburg are most productive. The fruiting of trees in 1878 was not such as failed in 1877.

Soils and Locations Productive.—Can see no difference in soils. Locations, even high or low, where sheltered, have done the best in fruiting.

Causes of Failure.—Northern blasts in April the only cause.

Diseases.—Only mildew on some varieties of apples, among which the White Winter Pearmain, Ortlely and Carolina Red June were the most injured. I think manuring and good culture might prevent this disease.

Grape Rot.—This disease always attacks the fruit at about the time the seeds form and harden. It begins at a high temperature, and generally continues not to exceed ten days, regardless of temperature. I have never known grapes lying on the ground and shaded to rot. Exposure, etc., appears to make but little difference. Severe pruning appears, to some extent, to cause mildew and rot.

Small Fruits.—Have been productive, excepting a year preceded by drouth. Strawberries: Charles Downing and Downer's are the best varieties in this section. Blackberries have been very productive; the Kittatinny is the most satisfactory. Raspberries: Black Caps are productive; McCormick the best. Gooseberries: Houghton and Pale Red. Currants: Not a success, only in shade. Special treatment: Mulching well with old hay or straw produces the best results with small fruits.

Forestry and Ornamentals have been successful during the last three years. Ailanthus, chestnut and tulip trees freeze and burn out. I cannot recommend the catalpa. Box elder and black walnut are the most desirable varieties.

Insects.—The codling moth is present. Borers are in the apple and peach trees, and need constant attention to exterminate them. The tree cricket is present, and a great pest, especially on late fruit. The tarnish plant bug and curculio are present. I believe the latter to be the cause of all the rot in plums, cherries and peaches.

DICKINSON COUNTY.

BY J. W. ROBSON, CHEEVER.

Wood Growth.—Apple, peach, plum and cherry has been extra. Terminal buds well matured at usual time—no second growth.

Crop.—Apples, fair for young trees; peaches, seedlings heavy, budded varieties medium; pears, some trees bore nice fruit; plums, native varieties bore heavily—the Miner, medium, but very fine; cherries, light.

Varieties Most Productive.—Peaches: Hale's Early, Crawford's Early, Crawford's Late, Stump-the-World, President, Heath Cling, Early York. Plums: Miner and natives. Cherries: Early Richmond and May Duke. The foregoing varieties fruited both years, 1877 and 1878.

Soil and Location.—Sandy and heavy loam has been most productive, and south and southeast exposures on uplands or second bottoms.

Diseases.—Twig-blight on Early Harvest apple trees; blister and mildew on seedling peaches; no rot. Remedy for blight: Remove affected twigs, and burn them. For mildew, dusting plants affected with sulphur is a sure cure.

Small Fruits.—Strawberries: Very productive; Wilson's Albany leads. Blackberries: Heavy crop, large fruit, clusters unusually large; Kittatinny leads. Raspberries: Fine crop, very large berries; McCormick is the standard. Gooseberries: Heavy crop; Houghton leads. Special treatment: Strawberries—Mulch in summer and winter. Blackberries, raspberries and gooseberries—Heavy mulching. Currants have not been tried with shade.

Forestry and Ornamentals have been universally successful; none have failed since 1874. For beauty of foliage, honey locust; for graceful growth, red and white elm; for utility at five years old, cottonwood. Our people are progressing rapidly in home adornment and landscape gardening.

Insects.—Codling moth is not yet found in our orchards. Have no knowledge of any borers, except a few in the peach trees this year. Tarnish plant bug, found this year for the first time, destroyed all the fruit buds of the Siberian crabs the past spring. Curculio—Nectarines were totally ruined by this insect; peaches, partially so; plums escaped.

New Seedlings.—Many early seedling peaches, of excellent quality and promise, have been produced in this county.

DONIPHAN COUNTY.

BY S. HATCH, WATHENA.

Wood Growth of apple, peach, pear, plum and cherry has been heavy, and well matured by the drouth in autumn. The terminal buds formed at the usual time, and there was no late or second growth.

Crop.—Apples, very light; peaches, pears, plums and cherries medium. Of apples, Winesap, Ben Davis, Nickajack, Belmont and Rambo were the most productive. Peaches, pears, plums and cherries bear annually, if the seasons are favorable. The causes of failure in the fruit crop for 1878, were: too warm weather in early spring, followed by cold, causing the trees to prematurely cast their fruit.

Diseases.—Some twig-blight and scab, mostly on the Fall Wine apple.

Grape Rot generally appears about the time of forming and hardening of the seeds. I do not think that it would develop in a temperature of eighty degrees. I believe the saturation of the atmosphere and ground with moisture necessary to germinate rot. The vineyards in this section are mostly on the bluffs of the Missouri river. Some have a northern, but generally they are on southern slopes. Those upon bottom land have nearly all failed.

Small Fruits.—Strawberries, blackberries and raspberries were very productive; gooseberries and currants medium. Treatment: Strawberries are protected in winter with straw. Blackberries: Kittatinny needs no protec-

tion; the Lawton does. Raspberries are heavily manured on poor land, and well cultivated; clip the canes in summer, and the lateral growth in spring. Gooseberries require rich land and good cultivation; are less liable to mildew in open grounds. Currants sheltered from the sun succeed; mulching alone does not secure success. Tried them on the north side of a fence, and they did well; removed the fence and mulched, and they failed.

Forestry and Ornamentals.—All planting of these classes was a success in 1878. None fail with age. I have evergreens now twenty feet high, and they are growing finely. The disposition to plant is increasing.

Insects.—The codling moth is quite prevalent in this county. Our people practice picking up all dropped fruit, and feeding it to the hogs, and putting bands around the bodies of the trees, to catch the larvæ. Borers are prevalent in the apple and peach trees and raspberry canes. Have not discovered them in the blackberry. Remedies: Cutting out with a knife is the only sure means of ridding our plantations of these insects. A wash of carbolic soap does not prove effectual as a preventive. Tree crickets have been troublesome on peaches. Tarnish plant bugs are present, but not numerous. The curculio is very troublesome, some years, on some sweet varieties of cherries. It destroyed the crop of early peaches in 1878. Coal-tar smoke to prevent its attacks on plums has been used, with beneficial results.

Seedling Fruit of Kansas Origin.—A fine sweet apple, larger, finer in quality and a better keeper than Talman's Sweet; an early bearer; promises to be valuable.

DOUGLAS COUNTY.

BY THOMAS M. PIERSON, KANWAKA.

Wood Growth.—Apple and cherry, medium; peach, pear and plum, large, and most varieties well matured—much earlier than usual. The Fameuse and Carolina Red June made a second and late growth, bloomed second time and formed fruit.

Crop.—Apples, light; peaches, heavy, but poor in quality; pears, medium, excellent quality; plums and cherries, medium.

Varieties Fruiting in 1878.—Apples: Willow Twig, Hubbardston Nonsuch, Jonathan, Maiden's Blush, Lowell, Talman's Sweet, Grimes's Golden, Alexander.

Varieties Fruiting both years, 1877 and 1878.—Apples: Willow Twig, Hubbardston's Nonsuch, Jonathan, Maiden's Blush, Lowell, Talman's Sweet, Alexander. The crop of 1878 was not the result of varieties which failed in 1877.

Location and Soil.—Locations having an eastern or northeastern slope have been most productive. Soils and locations most productive in 1878, yellow, sandy clay, on second bottom, or bluffs close to timber.

Grape Rot.—This disease has been very damaging for some years. It attacks the fruit on both old and young vines. The vineyards observed are on eastern slopes, with a deep yellow or mulatto soil, and have been well treated.

Diseases.—Twig-blight and scab on fruit, very light. Late fall and winter varieties dropped prematurely.

Small Fruits, varieties productive.—Strawberries: Wilson; heavy crop. Blackberries: Lawton, Kittatinny; heavy crop. Raspberries: Miami, Doolittle; heavy crop. Gooseberries: Pale Red; heavy crop. Currants: Red and White Dutch; light crop.

Means Used in Culture.—Strawberries require manuring and good cultivation, with mulching in winter. Blackberries, manuring and mulching, and summer clipping of canes. Raspberries, summer clipping of canes, and mulching during ripening of fruit, should the period be dry. Gooseberries, clean cultivation on rich soil, and renewal of fruit stalks every fifth year. Currants require deep, rich, moist soil, shaded on the south by a stone wall or board fence. No trees should be planted nearer than thirty feet of them, as the roots of the trees will produce a dearth, resulting in failure.

Insects.—The codling moth has become quite prevalent throughout this county; no general effort has been made for its destruction. Borers—Round-headed apple-tree borers are prevalent in neglected orchards; others are present in small numbers. Remedy: Knife and probe are the only reliable means for their reduction. Tree crickets are numerous, and very damaging to our fruits. Strawberry-leaf crumpler has become numerous in some plantations. Curculio—The plum and peach crop has been seriously damaged by this insect.

Forestry and Ornamentals.—The planting of such trees has been a complete success. Very little has been done in forestry, but almost every farmer has planted ornamentals and shade and shelter groups.

The following statistics for the year 1878, showing number of trees planted in orchard form, those in bearing and not in bearing, etc., have been kindly furnished me by B. F. Diggs, Clerk of this county:

NURSERIES.	
Number of acres.....	284
ORCHARDS.	
Number of Trees in Bearing.	
Apple.....	121,972
Pear.....	4,088
Peach.....	82,412
Plum.....	1,654
Cherry.....	28,944
Number of Trees not in Bearing.	
Apple.....	95,424
Pear.....	4,214
Peach.....	16,870
Plum.....	979
Cherry.....	7,019
Value of Product of 1877 Sold.	
Apples.....	\$29,231

Pears.....	\$718
Peaches.....	2,542
Grapes.....	8,161
Fruit not otherwise named.....	2,663

SMALL FRUITS.	
Acres of Raspberries.....	39 1/2
Blackberries.....	76 1/2
Strawberries.....	14 1/2
Other small fruits.....	6

FOREST TREES, ETC.	
Number of mulberry trees.....	1,092
Acres of forest trees (exclusive of mulberry).....	1,366
Miscellaneous trees not otherwise named,	4,260

VINEYARDS.	
Number of acres.....	277 1/2
Gallons of wine made in 1877.....	3,249

ELK COUNTY.

BY H. WELTY, ELK FALLS.

Wood Growth.—Apple, peach, pear, plum and cherry heavy, and well matured much earlier than usual.

Crop.—Apples and peaches medium; pears heavy on trees of bearing age; plums and cherries, a full crop. Most of the orchards in this county are too young to bear heavily.

Location and Soil.—Can see no difference in the results of varying soil, except with the cherry, which produces finest on upland, with limestone base. Locations having belts of timber on the west and south are preferable.

Diseases.—None observed.

Grape Rot.—Half of the crop rotted this year, which is attributed to a continuous spell of rains and excessive moisture in the atmosphere. This disease was most prevalent in vineyards planted on low lands, with poor drainage; soil, black loam. Neither age nor varieties had any apparent effect.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany and Triomphe de Gand productive. Blackberries: Lawton and Kittatinny very productive on all soils and localities. Raspberries: McCormick and Doolittle very productive. Gooseberries: Houghton productive. Currants not productive.

Means Used in Culture.—Strawberries: Mulched in winter. Blackberries, raspberries and gooseberries: Mulched in the spring. Currants: Shelter and mulch have been tried, with apparent benefit.

Forestry and Ornamentals.—Planting has been successful. Soft maples partially fail from attacks of borers. Cottonwood is most desirable for rapid growth, and black walnut for timber lots. Many of our people are planting shelter belts of forest trees, and ornamenting their dooryards with evergreens, shrubbery and flowers.

Insects.—The codling moth has appeared in this section. All species of borers, except the raspberry, are very troublesome. Remedy: Cut out with a knife, and wash the bodies of trees often with lye or soft soap, as a protection. The tree cricket is very damaging to peaches. The tarnish plant bug is numerous, and injurious to some garden vegetables, such as turnips, beets and cabbages. The curculio is very numerous, and damaging to early varieties of peaches.

List of Varieties of Fruit Planted, and not Reported for 1877.—Apples: Alexander, Grand Duke Constantine, Hussar, Emperor Magog, Grand Sultan, Czar, Polo, Peter the Great. Peaches: Poplar. Cherries: Utah Hybrid, red and black.

ELLIS COUNTY.

BY MARTIN ALLEN, HAYS CITY.

Wood Growth.—Apple, peach, pear, plum and cherry has been large, and well ripened early in the season.

Crop.—The trees are all too young to fruit.

Diseases.—None have appeared.

Small Fruits.—Strawberries: Wilson's Albany is productive. Blackberries have not fruited. Raspberries: Cultivated native varieties have fruited. Gooseberries: Houghton and a native variety have fruited. Currants have not been sufficiently tried to report. No special means have been used to increase fruiting with any classes.

Forestry and Ornamentals.—The plantings have been successful; no failure except from carelessness. The cottonwood is the most desirable for all purposes. Forest and fruit-tree planting is on the increase.

Insects.—Borers: The apple-tree species were introduced into this county with the first trees planted, but have nearly all disappeared. Cutting them out with a sharp knife is the best means of extermination. Curculio and the plum gouger of Walsh are both found in our wild plums, and are increasing in numbers.

ELLSWORTH COUNTY.

BY W. E. FOSNOT, ELLSWORTH.

Wood Growth.—Apple, peach, pear, plum and cherry good; matured earlier than usual.

Crop.—Apple trees too young to fruit. Peaches: Good for first fruiting. Pears: Same as apples. Plums: Good; native varieties. Cherries: Medium for age.

Soil and Location.—Sandy loam for upland, with eastern slope, and black loam for low land, have been the most productive.

Disease.—None, except premature dropping among native plums.

Small Fruits.—Strawberries: Wilson's Albany a success. Blackberries: Kittatinny, Wilson's Early, Iowa and Dewberry. Raspberries: Doolittle and Iowa. Gooseberries: Houghton and Pale Red. Currants: Red Dutch, White Dutch, Cherry, White Gondoin and Black.

Special Culture.—Strawberries: Mulch, and keep the runners cut off. Blackberries: Mulch, and clip the new growth when two feet high. Rasp-

berries: Same as blackberries. Gooseberries: Mulch, and thin out the shoots. Currants: Mulch heavy.

Forestry and Ornamentals.—Have been a success in 1878. Black walnut is the most desirable for all purposes.

New Seedlings.—There are several new seedling peaches that have originated in this county, which are quite promising.

FRANKLIN COUNTY.

BY E. J. NUGENT, OTTAWA.

Wood Growth.—Apple, peach, pear, plum and cherry quite small, and generally matured earlier than usual. A second or late growth occurred among the cherry and Carolina Red June apple trees.

Crop.—Apples, light; peaches, pears; plums and cherries, medium.

Varieties Fruiting in both 1877 and 1878.—Apples: Jonathan, Missouri Pippin, and Maiden's Blush. Peaches: Early York, Crawford's Early, Hale's Early, Crawford's Late, Old Mixon Cling, and Nugent's June. The cause of the non-fruiting of varieties generally productive, was the heavy winds during the blooming period.

Location and Soil.—High sandstone soil has been the most productive.

Disease.—Premature casting of the fruit and twig-blight on the Bartlett pear.

Small Fruits.—Strawberries, blackberries, raspberries and gooseberries are productive; currants are not productive.

Forestry and Ornamentals.—The varieties are given in the order as preferred: Cottonwood, walnut, and elm.

Insects.—Borers: None but the apple and peach are prevalent. The curculio has been very damaging to the peach and all varieties of plums, including the Wild Goose.

GREENWOOD COUNTY.

BY ISAAC DETHERIDGE, FAME.

Wood Growth.—Apple, peach, pear, plum and cherry, fair to extra, and well matured.

Crop.—Apples, medium; peaches, heavy; pears, a failure; plums, good of Wild Goose; cherries, a full crop of the early varieties.

Varieties bearing a good Crop in 1878, age considered.—Apples: Ben

Davis, Rawles Genet, Missouri Pippin, Willow Twig, Winesap, Rambo, and Fameuse. The crop of 1878 was a repetition of that of 1877, and there were no failures, except from the cause of a severe hail storm, which was local in its effects.

Location and Soil.—I cannot learn of any material difference in the results of orchards on upland or bottom, sand or limestone.

Diseases.—I have discovered none, except twig-blight in an orchard near Eureka, which was confined to eight or ten trees out of several hundred.

Grape Rot is not known here.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany and Jucunda are productive. Blackberries: Kittatinny, heavy and fine. Raspberries: Black Caps, medium crop. Gooseberries: Houghton very productive. Currants: Not sufficiently tried.

Means Used in Culture.—Strawberries: Manure and mulch. Blackberries: Little else but mulch. Gooseberries: Manure and clean cultivation.

Insects.—None of those mentioned in circular have been discovered.

HARVEY COUNTY.

BY MYRON HALL, NEWTON.

Wood Growth.—Apple, peach and cherry, medium; pear and plum, heavy. All matured earlier than usual.

Crop.—Apples, good; peaches, heavy; plums, mostly native varieties, heavy; cherries failed. Trees of all classes are young, and just coming into bearing. Age has been properly considered in this crop statement. Sandy loam, well-drained rolling surface, produces best results.

Small Fruits, varieties productive.—Strawberries: Wilson's Albany. Blackberries: Kittatinny. Raspberries: Smith. Gooseberries: Houghton. Currants: Red Dutch. Strawberries are mulched during winter, and currants mulched and shaded.

Forestry and Ornamentals.—Planting has been a success. Varieties most preferable: Cottonwood, elm, Lombardy poplar. An increasing disposition among the people to plant this class of trees.

Insects.—Peach-tree borer very plenty, and a very few of the raspberry borer are found. Remedy: A wash made of lime.

New Seedling Fruit.—Peaches, several valuable varieties, by M. Hall, Newton.

Varieties of Fruit Planted.—Apples: Early Harvest, Carolina Red June, Red Astrachan, Hightop Sweet, Cooper's Early White, Maiden's Blush, Autumn Strawberry, Rambo, Fall Pippin, Duchess of Oldenburg, Fameuse, Jonathan, Ortley, Grimes's Golden, Missouri Pippin, Smith's Cider, White

Winter Pearmain, Winesap, Rawles Genet, Willow Twig, Ben Davis. Peaches: Hale's Early, Amsden, Alexander, Early Beatrice, Crawford's Early, Heath Cling. Pears: Bartlett, Duchesse de Angouleme, Buffum, Clapp's Favorite, White Doyenne, Seckel, Vicar of Winkfield. Plums: Damson, Wild Goose. Cherries: Early Richmond, May Duke, Governor Wood. Strawberries: Wilson's Albany. Blackberries: Kittatinny. Raspberries: Doolittle, McCormick, Smith's. Gooseberries: Houghton. Currants: Red Dutch, Cherry.

The people are manifesting more interest at this time in planting trees, fruit and ornamental, grape vines and small fruits, than at any prior period. Groves of trees are found around the dwellings of almost every farm.

JACKSON COUNTY.

BY W. D. BARNETT, HOLTON, AND J. W. WILLIAMS, COPE.

Wood Growth.—Apple, peach, pear, plum and cherry has been very good, and matured earlier than usual. The Carolina Red June produced an autumn bloom and fruit.

Crop.—Apples, light; peaches, heavy; pears, plums and cherries, medium.

Varieties productive in 1878.—Apples: Rawles Genet, Ben Davis, Jonathan, Willow Twig, Red Astrachan, Early Harvest, and Winesap. Pears: General varieties. Plums: Wild Goose. Cherries: May Duke, Early Richmond, and the Morelles.

Varieties Productive both years, 1877 and 1878.—Apples: Red Astrachan, Early Harvest, Ben Davis, Jonathan, and Winesap.

Localities and Soils.—Cannot discover any material difference in soils. Elevated northern slopes are most productive.

Diseases.—A few cases of twig-blight and rotten-root, and considerable scab and rot.

Grape Rot.—This occurs at the time of forming and hardening of the seed, and when the temperature reaches 85°, with heavy rains. The vineyards observed are on high prairie, with eastern and northwestern slopes; natural drainage, rich and sandy loam, subsoil stiff clay. Varieties tested: Concord, Clinton, Catawba, and Isabella; age, four to fifteen years.

Small Fruits.—Strawberries: Wilson's Albany. Blackberries: Kittatinny and Lawton. Raspberries: Doolittle and McCormick, medium crop. Gooseberries: Houghton, very productive. Currants: Red and White Dutch, a fair crop.

Methods of Culture.—Strawberries: Good culture, liberal manuring, mulched summer and winter. Blackberries: Massed in rows, and canes shortened during growing season. Raspberries: Same as for blackberries.

Gooseberries: Thinning out of the wood is important. Currants, with shade and mulch, are a success.

Forestry and Ornamentals.—Have been a complete success. The cottonwood fails when cultivation ceases. Black walnut and cottonwood are most desirable for all purposes. There is a deeper interest manifested in planting trees, etc., than ever before.

Insects.—The codling moth is prevalent in orchards near the towns, where apples from Eastern States have been shipped in. Some are pasturing hogs in their orchards, to hold this insect in check. Borers: Round and flat-headed apple-tree borers are found. None of the raspberry species has yet been discovered. Cutting them out of the tree is the safest means for their extermination. Tree crickets and tarnish plant bugs are quite numerous. Curculios have been very damaging to plums.

STATISTICAL REPORT OF HORTICULTURE FOR JACKSON COUNTY, KANSAS, FOR 1878.

Number of acres in nursery	6 $\frac{3}{4}$	RECAPITULATION.	
Number of acres of vineyard in county.....	13	Whole Number of Trees.	
Number of Trees Bearing.		Apple.....	184,016
Apple.....	30,074	Peach.....	87,983
Peach.....	59,381	Pear.....	2,228
Pear.....	961	Plum.....	1,365
Plum.....	478	Cherry.....	18,270
Cherry.....	10,508	Value of Product of 1877 Sold.	
Number of Trees not Bearing.		Apples.....	\$6,751 60
Apple.....	78,942	Peaches.....	697 40
Peach.....	28,602	Pears.....	77 85
Pear.....	1,267	Grapes.....	57 10
Plum.....	887	Small fruits.....	7 50
Cherry.....	7,762		

JEFFERSON COUNTY.

BY J. N. HALL, OSKALOOSA.

Wood Growth.—Apple, peach, pear, plum and cherry has been very fine, and matured early. Some varieties made second growth.

Crop.—Apples, light; peaches, heavy; pears, very light; plums, none; cherries, heavy.

Varieties Productive in 1878.—Apples: Maiden's Blush, Gilpin, Jonathan, Winesap, Early Harvest. Cherries: Early Richmond and Morello. Peaches: Amsden's June.

Soil and Location.—Mulatto soil, with northern slope, is most productive.

Diseases.—Some blight of twigs, and scab and rot among fruit. Some of the roots are covered with a white, flossy substance, which causes disease.

Grape Rot.—None this year.

Small Fruits, varieties grown.—Strawberries: Monarch of the West. Blackberries: Kittatinny. Raspberries: McCormick. Gooseberries and currants, a failure.

Special Culture.—Strawberries: Clean culture, manuring, and shelter in winter. Blackberries: Well manured with old, rotten wood. Raspberries: Same as for blackberries. Currants have not been tried with shade.

Forestry and Ornamentals.—All have succeeded. Black walnut the best variety for all purposes.

Insects.—Codling moth quite prevalent. Borers—Round-headed apple and peach tree are quite plenty; have not observed the raspberry species. Remedies: Knife and wire probe for those attacking the apple trees, and boiling water or weak lye for the peach. Have noticed the work of the tree cricket and tarnish plant bug. Curculio destroys all the plums.

New Seedling Fruit.—Peach, very fine and promising as an early variety, by D. Newhouse.

JEWELL COUNTY.

BY E. T. BYRAM, JEWELL CITY.

Wood Growth.—Apple, peach, pear, plum and cherry has been unusually strong and well matured. Terminal buds formed earlier than usual.

Crop.—Apples: Trees too young to fruit. Peaches: Seedlings excellent. Pears: None. Plums: Native varieties under cultivation, heavy. Cherries: Mostly Early Richmond; trees young, and therefore not heavy.

Location and Soil.—Apples, so far as any have fruited, are upon bottom land, peaches on elevations. Sandy loam most productive.

Diseases.—None are yet apparent. Grapes have not been sufficiently tested to determine anything respecting causes of rot. Vines that have fruited are very healthy, and fruit very fine.

Small Fruits, varieties productive.—Strawberries: Wilson's Albany is the only variety that has fruited. Blackberries: Kittatinny. Raspberries: Native varieties. Gooseberries: Houghton. Currants are very doubtful.

Forestry and Ornamentals have been successful, particularly forest trees. A few evergreens have succeeded. Cottonwood is the favorite, on account of rapid growth and ready adaptation to any soil or location; next in favor is the boxwood. The settlers feel more encouraged than in years past to plant extensively.

Insects.—Peach-tree and flat-headed apple-tree borers very troublesome. The round-headed apple-tree species not plenty. No remedies have been used except cutting out with a knife. Tree crickets have been quite injurious to peaches. Curculio very common in wild plums.

Varieties of Fruit Planted.—Apples: Ben Davis, Missouri Pippin, Cooper's Early White, King of Tompkins County, Maiden's Blush, Rambo, Jonathan, Red Astrachan, Grimes's Golden, White Winter Pearmain, Benoni, Dominie, Wagener, Fall Wine, McAfee's Nonsuch, and several so-called "Hybrids"—

rather guess should be called "Humbugs." Peaches: Very few other than seedlings. Plums: Mostly native varieties. Cherries: Early Richmond, English Morello, May Duke, Governor Wood. Strawberries: Wilson's Albany, Monarch of the West. Blackberries: Kittatinny, Lawton, Wilson's. Raspberries: Native varieties and Turner. Gooseberries: Houghton, Mountain. Currants: Red Dutch.

JOHNSON COUNTY.

BY WILLIAM MAXWELL, EDGERTON.

Wood Growth.—Apple, peach, pear, plum and cherry, large, and well matured—earlier than usual. The Carolina Red June apple blossomed and formed a second crop as large as Siberian crabs.

Crop.—Apples, very light; peaches, pears, plums and cherries, medium.

Varieties Fruiting in 1878.—Apples: Winesap, Willow Twig and Carolina Red June most productive; none bore a good crop. Pears: Duchesse de Angouleme, Bartlett. Plums: Wild Goose, Miner, natives. Cherries: Early Richmond.

Varieties Fruiting both years, 1877 and 1878.—Apples: Winesap, Willow Twig. Pears: Duchesse de Angouleme, Bartlett. The crop of 1878 was not the result of varieties which failed in 1877. Cause of failure in 1878, late frosts and continued high winds.

Diseases.—Twig-blight, light; a great deal of scab, mildew, rot, and premature dropping of fruit.

Grape Rot.—None but the bitter rot this season; generally occurs when the temperature reaches 90° to 100°, and decreases as the temperature lowers and a dry atmosphere prevails. A moderate shower, followed by a still, hot spell, rapidly develops rot. Location of vineyard observed, an elevated eastern slope. Subsoil has been well stirred; surface sandy, in drift form, not sheltered. Varieties planted: Concord, Martha, Ives, Dracut Amber, Clinton. The first three varieties have suffered least.

Small Fruits, varieties tested.—Strawberries: Downer, Wilson's Albany; not very productive. Blackberries: Lawton, Kittatinny, Missouri Mammoth, Western Triumph; very productive. Raspberries: Black Caps. Gooseberries: Houghton, Mountain; productive. Currants not productive.

Means Used in Culture.—Strawberries: Cultivate in hills, cut off all runners, cover during winter. Blackberries: Keep in rows, cut out all canes not needed for the crop the following year, and head back canes to three and one-half feet in length. Raspberries: Clean culture; head back canes same as for blackberries. Gooseberries: Be careful not to disturb roots in cultivation; cut

out unnecessary wood. Currants: Maintain a mulch throughout the year around the plants. This, with shade, is indispensable to success.

Forestry and Ornamentals.—Planting has been a success. Black ash is the most desirable forest tree. The disposition to plant has greatly increased.

Insects.—Codling moth numerous, and on the increase. Borers—Round-headed apple-tree are very troublesome; flat-headed, but very few. Raspberry borer numerous; none in the blackberry. Protection: Use soft soap, or lye and turpentine. Strawberry-leaf crumpler present, but not numerous. The rose chafer is somewhat troublesome. Curculio very numerous; neither Wild Goose nor Miner plums escape their attacks. Where pigs and poultry are allowed free range of grounds, this insect is held in check very much.

New Seedling Fruits.—Apples: Valuable, by Henry Rhoades, Thos. Rosington and Z. H. Thomas, of Gardner. Peaches: Promising seedlings, by Mr. Bigelow and George Middleton, of Gardner.

Varieties Planted, not Reported for 1877.—Peaches: Law's Early. Cherries: King's Early. Blackberries: Hoosac Thornless. Raspberries: Golden Queen.

LABETTE COUNTY.

BY J. L. WILLIAMS, OSWEGO.

Wood Growth.—Apple, plum and cherry, medium; peach, light; pear, strong. All well matured. A few varieties of apple and pear made a second growth.

Crop.—Apples and plums, medium; peaches, heavy; cherries, light.

Varieties which bore a good Crop in 1878.—Apples: Ben Davis, Willow Twig, Lowell, Red Astrachan, Jonathan, Gilpin, and Keswick Codlin.

Varieties which Fruited each year, 1877 and 1878.—Apples: Ben Davis, Jonathan, Lowell, and Gilpin. The varieties which fruited in 1878 were not generally those which failed in 1877.

Location and Soil.—Northern slopes and sandy bottom lands for apples, and red soil for peaches, have proven the most productive. The causes of non-productiveness in 1878 of the leading varieties were the cold spring winds, heavy rains and extreme heat.

Diseases.—Twig-blight on peach, and scab on Winesap, Carolina Red June, Missouri Pippin, and White Winter Pearmain.

Grape Rot.—Commenced in June, and immediately after a rain. I believe an excessive moisture in the ground will generate and support rot. In a large number of vineyards, on every possible slope, and without shelter, all suffered about the same with this disease.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany and Charles Downing. Blackberries: Kittatinny and Lawton. Raspberries: Doolittle and McCormick. Gooseberries: Houghton. Currants: Red Dutch.

Means Used in Culture.—Strawberries: Manure and mulch. Blackberries: Manure. Raspberries and gooseberries: Manure and cultivation. Currants: Manure, mulch and shade.

Forestry and Ornamentals.—Planting has been a success; none have failed, but evergreens—Norway spruce and balsam fir. Soft maple is the leading variety for all purposes. Our people manifest a deeper interest in this work than heretofore.

Insects.—The codling moth is not prevalent in this county. Borers: The flat-headed apple-tree, peach-tree and raspberry are not numerous yet. Remedy: A good knife and garden trowel well used are effectual in securing relief. The strawberry-leaf crumpler and rose chafer are not numerous. The curculio has been very damaging.

LINCOLN COUNTY.

BY A. J. DAVIS, LINCOLN.

Wood Growth of trees of all kinds in the county has been extra, and ripened at the usual time. Late growth reported in only one portion of the county.

Crop.—Apple trees too young to fruit. Peaches: Medium to heavy. Pears: Medium, where the trees are of bearing age. Plums and cherries: Medium.

Soil.—Both loam and limestone succeed, and orchards on bottom and up-land also flourish.

Diseases.—No diseases in the county.

Grape Rot.—None.

Small Fruits.—Strawberries: Monarch of the West, Great American, Wilson's Albany, Agriculturist and Nicanor are reported on trial. Blackberries: Kittatinny, Taylor's Prolific, Lawton and New Rochelle are on trial. Raspberries: McCormick, Philadelphia and the Black Caps are on trial. Gooseberries: Crown Bob, Smith's, Houghton, Pale Red and Downing succeed. Currants: White Dutch, Red Dutch and La Versailles have failed from lack of shade, in most places; where tried with shade, they have produced a good crop.

Forestry and Ornamentals.—Have generally been successful. The cottonwood leads. Lombardy poplar, black walnut, soft maple, white ash, box elder and mulberry are reported successful in the county.

Insects.—Few borers are reported. The strawberry-leaf crumpler, tarnish plant bug and curculio are reported.

This county is quite new, and many of the first plantings were a failure, from the attacks of grasshoppers in 1874. All classes of trees, vines, etc., grow exceedingly well, and I can see no reason why they should not fruit. Some of the older trees fruited this season.

LINN COUNTY.

BY J. W. LATIMER, PLEASANTON.

Wood Growth.—Apple, peach, pear, plum and cherry, quite large, and matured earlier than usual. A few varieties of apple and cherry made a second growth, and bloomed in the fall.

Crop.—Apples and plums, light; peaches, pears and cherries, medium.

Varieties Fruiting in 1878.—Apples: Early Pennock, Trenton Early, Carolina Red June, Red Astrachan, Summer Rose, Maiden's Blush, Grimes's Golden, Limber Twig, Ben Davis, Bentley's Sweet, Stark. Peaches and pears: A general crop where trees were in bearing age.

Varieties Fruiting both years, 1877 and 1878.—Apples: Summer Rose, Red Astrachan, Maiden's Blush, Grimes's Golden, Limber Twig, Bentley's Sweet, Stark, Ben Davis. Peaches and pears: A general crop. Cherries: Common Morello, English Morello, heavy each year. Such varieties of apples as bore heavy crops in 1877 have generally failed to fruit this year. Cause of failure of varieties to fruit, over-burdened in 1877. All classes and varieties bloomed freely this year.

Location and Soil.—No perceptible difference this year.

Grape Rot.—This disease begins at the time of "forming and hardening of the seed." Has been most prevalent during heavy, rainy seasons. Vineyard observed has a southern exposure and good surface drainage. Vines ten years old; about twenty varieties, including Concord, Clinton, Ives and Martha. The last two named have borne good annual crops, and escaped the rot entirely.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, Charles Downing, Kentucky; all productive. Blackberries: Kittatinny; productive. Raspberries: Turner, Purple Cane, Doolittle, Miami, McCormick; all productive. Gooseberries: Houghton; productive. Currants not a success. Since the plan of planting on the north side of a fence has been adopted, currants are quite promising.

Means Used in Culture.—Strawberry: Cultivate in hills during summer, after fruit is removed, and mulch during winter. Blackberry: Cultivate in summer, head back canes, and mulch latter part of the season. Raspberry: Same as for blackberry. Gooseberry: Same as for blackberry, except the heading-back practice. There is a valuable fruit here omitted, the dwarf huckleberry, constantly prolific and easily grown.

Forestry and Ornamentals, mostly planted for streets and lawns, are successful. Soft maple and box elder the most difficult, owing to attacks of borers. Lombardy poplar fails with age. For ornamental, catalpa is the most desirable, and sweet chestnut second to it. The disposition to plant for ornamentation is increasing.

Insects.—The codling moth prevalent. Borers—Flat-headed apple and peach-tree species are common; others are not. Remedy: A wash of soft soap and alkali water, applied to bodies of trees before the worm has passed through the bark, after which nothing but the knife and probe will afford relief. The rose chafer has been very troublesome for years past, but very few have been seen the present season. Curculio is very destructive to our plums, and of late years to our peaches. Believe in allowing hogs the range of orchards as the most effectual means of protection.

New Seedling Fruit.—Peach: A valuable early variety, by Elijah Carmon, Prescott, Kas. Parentage, Hale's Early. In good shipping condition on May 30th, 1878, and all ripe by June 9th.

List of Evergreens for Linn County.—I desire to introduce in this report the following list of evergreens, made in the order preferred, for this county, and will form the list into two classes: 1st, Such as have been cultivated for several years past; 2d, such as are of recent introduction, for trial.

Class first—Red cedar, white pine, Scotch pine, trailing juniper, black Austrian pine, balsam fir, hemlock spruce, Norway spruce, American arbor vitæ, Irish juniper.

Class second—*Retinospora aurea plumosa*; arbor vitæ—heath-leaved, pyramidal, aurea variegata, Tom Thumb, and Burrows's golden.

The first three varieties named in the second class passed through the drouth of 1878 apparently uninjured. The first named in Class 2d is the finest evergreen I am acquainted with, and I feel confident that it will prove to be well adapted to our climate.

LYON COUNTY.

BY ROBERT MILLIKEN, EMPORIA.

Wood Growth.—Apple, peach, pear, plum and cherry unusually heavy, and matured early in the season.

Crop.—Apples and pears, light; peaches and cherries, heavy.

Varieties Specially Productive in 1878.—Apples: American Golden Russet, English Golden Russet, and Yellow Bellflower.

Location and Soil.—There is no apparent difference in either, in the results of this year.

Diseases.—Scab on apples, notably the White Winter Pearmain; and twig-blight on the Winesap.

Grape Rot.—This disease develops at the period of "forming and hardening of the seed." The most extensive cases of rot have been in vineyards located on level, undrained lands.

Small Fruits productive.—Strawberries. Blackberries: Kittatinny. Raspberries: Black Caps. Currants: Not productive; promising in shade.

Forestry and Ornamentals.—Trees planted for shade and ornament mostly succeed. All evergreens, except pines and red cedars, fail. Deciduous trees, such as European larch, mountain ash, larch, beech, chestnut and maple, fail. Soft maple, Lombardy poplar and cottonwood, on upland, fail with age. The most desirable variety is green ash; for shade, elms. There is an increasing disposition to plant for shade and ornament.

Insects.—The codling moth is present in a limited number in the orchards near Emporia. Borers: The peach-tree species are quite damaging in this county. Remedy: Cut them out; and for future protection, throw up a mound of earth around the body of the tree. The tree cricket is present, but not numerous. The tarnish plant bug is present. The curculio is very numerous.

New Seedling Fruit.—Peaches: "The Emporia," by Mrs. E. Burns, Emporia; several others, by Simon Buchu.

MARSHALL COUNTY.

BY JOHN M'KEE, MARYSVILLE.

Wood Growth.—Apple, peach, pear, plum and cherry has been good to extra, and well matured.

Crop.—Apples and peaches, heavy; pears, very few; cherries, heavy. Of apples, the Ben Davis and Winesap have been the most productive.

Location and Soil.—There is no difference in soils. A north slope is the most productive.

Diseases.—Twig-blight quite light.

Grape Rot appears in the spring, and seems dependent on excessive rains and heat. Vineyards should be well sheltered.

Small Fruits.—Strawberries have not been sufficiently tested. Blackberries do well. Raspberries: The Black Caps are productive; the red varieties have not been tried. Gooseberries: All kinds succeed. Currants: When shaded, grow well. I think all small fruits do best when lightly shaded and well mulched.

Forestry and Ornamentals.—Have been a complete success, and do better as they grow older. The cottonwood is the most desirable for all purposes. There is a very-much-increased disposition to plant these classes of trees.

Insects.—I have not learned of any insects in this county doing injury to fruits, except a few tarnish plant bugs.

McPHERSON COUNTY.

BY THOMAS BOGGS, M'PHERSON.

Wood Growth.—Apple, peach and plum, heavy; pear and cherry, medium, and matured properly.

Crop.—Apples and cherries, light; peaches and plums, medium. All trees of the above are quite young, consequently the crop is comparatively light. Pear trees are too young to fruit.

Varieties Fruiting in 1878.—Peaches (mainly): Stump-the-World, Old Mixon Cling, Heath Cling, Crawford's Early. Cherries: Early Richmond. Cause of failure in fruitage in 1878, late spring frosts.

Location and Soil.—Northern slope and black loam.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, Colonel Cheney. Blackberries: Kittatinny, Lawton. Raspberries: McCormick, Doolittle. Gooseberries: Houghton. Currants: Red Dutch.

Means Used in Culture.—Strawberries: Mulch in winter; would recommend formation of new beds every third year. Blackberries and raspberries do better with some shade. Currants have been tried in this county with shade, and the result was most satisfactory.

Forestry and Ornamentals.—Planting of trees for such purposes has been attended with remarkable success. There has been no failure where properly done and after-care given. Varieties preferred: Osage orange, catalpa, cottonwood, box elder. Disposition to plant for shade, shelter, etc., is universal among the people of this county.

Insects.—Borers—There are a few among apple and peach trees only. Means to check and destroy them, constant work around the trees, and removing all found with the knife. Curculio has put in an appearance.

This county is new, and few of the trees, etc., have fruited. I can see no reason why horticultural investments should not prove successful. A very large amount has been invested during the past two years.

MIAMI COUNTY.

BY L. BISHOP, OSAWATOMIE.

Wood Growth.—Apple, peach, pear, plum and cherry above medium, and matured earlier than usual. Some few cases of second growth occurred. New bloom appeared in September, and at this date (November 25th), fresh bloom is found on the Carolina Red June apple trees.

Crop.—Apples, medium to light; peaches, heavy; pears, medium; plums, heavy (Wild Goose and Sand); cherries, heavy.

Varieties bearing a good Crop in 1878.—Apples: Ben Davis, Willow Twig, Yellow Bellflower, Grimes's Golden, and Stark. Peaches: The general varieties bore well. Pears: Bartlett, Buffum, Flemish Beauty, Belle Lucrative, Vicar of Winkfield, Duchesse de Angouleme, Louise bon de Jersey, Urbaniste, and Beurre Diel. Plums: Wild Goose. Cherries: Early Richmond and common Morello.

Varieties Fruiting both years, 1877 and 1878.—Apples: Ben Davis, Willow Twig, Grimes's Golden, and Stark. Peaches: All varieties, both years. Pears: Bartlett, Buffum, Flemish Beauty, Belle Lucrative, Beurre Deil, and Duchesse de Angouleme. Plums: Wild Goose and Sand. Cherries: Common Morello, Leib, and Early Richmond. The crop of 1878 was not the result of such varieties as failed in 1877.

Location and Soil.—I cannot perceive any difference in fruiting, only in the peach, which succeeds better on high lands.

Diseases.—Scab appeared on many varieties of apples.

Small Fruits, varieties tested.—The Col. Cheney strawberry, Kittatinny blackberry, McCormick raspberry, Downing gooseberry, and White Grape currant, are productive.

Means Used in Culture.—Strawberries: Clean cultivation, cut off all runners, and mulch during the year after the first season. Blackberries: Summer clipping of the canes. Raspberries: Clean cultivation, and summer clipping, as for blackberries. Gooseberries: Trained to a single stem, and cultivated or mulched. Currants: Planted in the shade of a fence, and mulched.

Forestry and Ornamentals.—Planting has been a success. The deciduous classes seldom fail. Of evergreens, the hemlock, arbor vitæ and spruce have not been satisfactorily successful. Black walnut is preferred as a forest tree, and catalpa for shade and ornament. An increased disposition in this direction is apparent.

Insects.—The codling moth and borers are not numerous. Remedy for the peach-tree borer: Cut out with a knife during the first four years, and then throw up a mound of earth around the base of the trees. The rose chafer has not been troublesome for several years. To destroy this insect, shake them into a pan of kerosene. The curculio has been very damaging to the peach crop. The early peaches were rendered nearly worthless by their attacks; also, pears suffered from their work.

New Seedling Fruit.—Peaches: Promising varieties by L. Bishop, Osawatomie.

List of Varieties of Fruit Planted, and not Reported for 1877.—Apples: Black Gilliflower, Pickard's Reserve, May, Red Stripe, Blinkbonny, Cluster Pearmain, Fenley, Vandevere Pippin, Benoni, Twenty-ounce apple, Belmont, Roman Stem, Monmouth Pippin, Detroit Black, and Brown's Late Queen. Strawberry: Kentucky.

MITCHELL COUNTY.

BY E. A. TAYLOR, BELOIT.

Wood Growth.—Apple, peach, pear, plum and cherry has been unusually fine, and matured terminal buds at usual season.

Crop.—Apples, plums, pears, trees too young to fruit; peaches, heavy; cherries, light.

Diseases.—None to report.

Small Fruits.—Strawberries: Wilson's Albany; productive. Blackberries: Kittatinny; productive. Raspberries: Doolittle, McCormick. Gooseberries: Houghton. Currants: Red Dutch, White Grape. No special culture has been used, except mulch for currants.

Forestry and Ornamentals have been successful. Honey locust leads. There is an increasing disposition to plant trees and ornament.

Insects.—Have observed none except the round and flat-headed apple-tree borers, which are quite prevalent.

MONTGOMERY COUNTY.

BY L. A. WALKER, INDEPENDENCE.

Wood Growth.—Apple, peach, pear, plum and cherry, good.

Crop.—Apples, peaches, pears and plums, light; cherries, medium. As will be seen, no class has borne a good crop this season, owing mainly to trees being too young, excepting peaches.

Grape Rot appeared at an early part of the season, and continued throughout. I think excessive moisture in the ground sufficient cause to generate and support the rot in this warm latitude. The points of observation are located on an elevated prairie, with a northern, eastern and southern exposure—sandstone soil. Vines are three, four and five years old, and trained to stakes and trellises.

Small Fruits, varieties productive.—Strawberries: Wilson's Albany. Blackberries: Lawton, Kittatinny. Raspberries: Doolittle, Miami, Philadelphia. Gooseberries: Houghton. Currants succeed sheltered on south side, with a moist soil. All classes except currants have been productive, where given ordinary care.

Forestry and Ornamentals.—Planting has been successful. Cause of failures: Borers and sun-scald with the maple, and blight with the ash. There is as much of this kind of work done as the means of our people will justify.

Insects.—Codling moth not present. Borers present in injured and neglected orchards. Remedy and protection: Clean culture, avoiding any occurrence of injury to the trees. Wash with diluted soft soap, with free use of the knife for such as go into the trees. Rose chafer not prevalent. Curculio has been injurious to plums.

The following statistical report of the Clerk of this county shows the extent of investments made in horticultural interests for the year 1878:

NUMBER OF BEARING TREES.		Plum	5,978
Apple.....	45,603	Total.....	230,049
Peach.....	206,776	NUMBER ACRES IN SMALL FRUITS.	
Pear.....	467	Vineyards.....	158.4
Cherry.....	7,008	Raspberries.....	37.4
Plum.....	2,167	Blackberries.....	91.4
Total.....	260,921	Strawberries.....	22.75
NUMBER NOT IN BEARING.		Other small fruits.....	33
Apple.....	145,394	FOREST TREES.	
Peach.....	59,386	Acres.....	223.75
Pear.....	2,916		
Cherry.....	16,380		

MORRIS COUNTY.

BY F. B. HARRIS, WHITE CITY.

Wood Growth.—Apple and peach, extra; pear, plum and cherry, good, and matured earlier than usual.

Crop.—Apples, heavy, age considered; peaches and cherries, medium; pears and plums—none of fruiting age. The same varieties fruited both years, 1877 and 1878.

Diseases.—I have no knowledge of any diseases existing among the orchards.

Grape Rot.—None has appeared to this date.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany is very productive. Blackberries: The Kittatinny and Lawton are very productive. Raspberries: The natives are productive. Gooseberries: The Houghton and natives are productive. Currants: Very few grown; mulching is beneficial.

Means Used in Culture.—Strawberries: Manuring, and thorough cultivation. Blackberries, raspberries and gooseberries: Thorough cultivation.

Forestry and Ornamentals.—Planting has been successful, with the exception of evergreens. No varieties are failing with age. Cottonwood is the most successful for forestry. There is quite a disposition to ornamental planting.

Insects.—A very few codling moths have been noticed. No borers were observed the past season. Tree crickets were observed in some orchards. The curculio were very destructive to plums.

New Seedling Apple.—Very promising, by Wm. Downing, Council Grove.

List of Varieties Fruited, and to be preferred in the order named.—Apples: For summer, Early Harvest; autumn, Maiden's Blush, Rambo, and Northern Spy; winter, Rawles Genet and Winesap. The Golden Pippin and Green Pippin have fruited, but are shy bearers. Peaches: Hale's Early, Crawford's Early, Stump-the-World, Crawford's Late, and Heath. Cherries: Early Richmond and Morello. Grape: Concord.

NEOSHO COUNTY.

BY GEO. W. ASHBY, CHANUTE.

Wood Growth.—Apple, peach, pear, plum and cherry has been good, and ripened earlier than usual. The Carolina Red June, Rambo and Missouri Pippin made a second growth.

Crop.—Apples, very light; peaches, medium; pears and plums, heavy; cherries, very heavy. The varieties of apples which bore fruit in 1877 also fruited in 1878, but there was not a full crop.

Location and Soil.—Did not appear to produce any difference this year.

Diseases.—Scab on apples, rot among the peaches, and in some locations mildew affected the gooseberries.

Grape Rot affects the grape during most of the fruiting period, and the higher the temperature the more extended the rot. I do not believe that moisture in the ground alone is sufficient to generate and support this disease. Vineyards observed: First—On southern slope, rapid surface-drainage, dry, rich, alluvial soil, no shelter; variety, Concord, eight years old; crop was destroyed by rot. Second—North slope, rapid surface-drainage, dry, rich soil, no shelter; varieties, Concord, Clinton, and Dracut Amber, five years old; nearly ruined by rot. Third—Level land, black limestone soil; variety, Concord, five years old; matured a good crop. Sheltered on east with belt of forest trees; sheltered on west with closely-planted young orchard; other sides exposed.

Small Fruits, varieties tested.—Strawberries: Wilson. Blackberries: Kitatinny. Raspberries: Miami, Philadelphia. Gooseberries: Houghton. Currants: Red Dutch.

Means Used in Culture.—Strawberries: Winter mulching. Blackberries and raspberries: Cultivation, and heading back the canes in summer. Gooseberries: Cultivation and pruning; manure appears to aggravate mildew. Currants: Many are being planted, under trial of shade.

Forestry and Ornamentals.—Planting has been successful this season. No failures appear with age. Catalpa is the leading variety. There is an increasing disposition to plant.

Insects.—The codling moth is not prevalent. Borers are present in the

apple trees; none among the berries. Remedy: Cut them out with a knife; then wash the bodies of the trees with some kind of alkali. The tarnish plant bug is present; also the rose chafer, but very few this season. The curculio is quite damaging to peaches. Hogs allowed the range of orchard grounds will help greatly in their destruction.

List of Fruits Planted, and not reported for 1877.—Apples: Summer Extra, Brittle Beauty, Bracken, Bassett's Best, Moore's Extra, Brilliant, and Evans's Favorite. Pears: Harvest and Beurre Bosc. Cherries: Early Purple, Guigne, Louis Phillippe, Elton, Yellow Spanish, and Kirtland's Favorite. Strawberries: Warder, Forest Rose, Queen of the West, Monarch of the West, Capt. Jack, Champion, and Great American. Raspberries: Ganargua, Herstine, and Gregg. Currants: Transparent, White Grape, La Versailles, and Cherry.

OSAGE COUNTY.

BY JAMES A. DRAKE, OSAGE CITY.

Wood Growth.—Apple, peach, pear, plum and cherry, extra, and well ripened—earlier than usual.

Crop.—Apples, light; peaches, heavy; cherries, heavy; no plums or pears in bearing.

Varieties Producing Crop in 1878.—Apples: Carolina Red June, Maiden's Blush, Winesap, Missouri Pippin, White Pippin, Yellow Bellflower, Willow Twig, Ben Davis.

Varieties Fruiting both years, 1877 and 1878.—Apples: Winesap, Missouri Pippin, Willow Twig.

Location and Soil.—No apparent difference this season, only in the benefit of shelter, which was apparent in some orchards. Cause of non-productiveness of leading varieties, cold weather in the spring.

Diseases.—None apparent. Premature ripening was occasioned by drouth in the latter part of summer and through the fall.

Grape Rot.—None this season.

Small Fruits.—Strawberries, blackberries, raspberries, gooseberries and currants, very productive. Strawberries were lightly mulched. Currants, where shaded, succeeded.

Forestry and Ornamentals.—Planting has been successful. No failures, except with evergreens; no failures from age. Variety of forest trees most desirable, cottonwood. There is an increasing disposition to plant for all purposes.

Insects.—Codling moth present, not numerous. Tarnish plant bug quite

damaging in 1877; were not in 1878. Curculio not as damaging this as last season.

Varieties Planted, not Reported for 1877.—Peaches: Amsden, Alexander, Early Beatrice, Steadley, Morgan's Yellow.

PAWNEE COUNTY.

BY C. C. CHEVALIER, GARFIELD.

Wood Growth.—Apple, peach, pear, plum and cherry, medium, and matured some earlier than usual.

Crop.—Apple, pear, plum and cherry trees too young to fruit; peach trees fruited lightly.

Diseases.—None but an occasional twig-blight on pears.

Small Fruits.—Strawberries: Wilson's Albany has fruited; requires a great deal of care. Blackberries: Kittatinny bore well. Raspberries: Doo-little bore well. Gooseberries: Houghton bore well. Currants: White Dutch, White Grape and Cherry did well.

Special Means Used.—Strawberries, mulching and irrigating; currants, protection on south side.

Forestry and Ornamentals have been successful. Box elder and cottonwood partially fail; ailanthus winter-kills while young; cottonwood most promising variety for all purposes. There is a general disposition to plant of all classes of trees and fruit-bearing plants.

Insects.—Have not discovered any except a few borers.

POTTAWATOMIE COUNTY.

BY ABNER ALLEN, WABAUNSEE, AND M. D. TENNEY, WESTMORELAND.

Wood Growth.—Apple, peach, pear, plum and cherry remarkably large, which ripened some earlier than usual.

Crop.—Apples, medium; peaches, heavy; pears, medium; plums, native varieties heavy; cherries, heavy. The Winesap, Ben Davis, Grimes's Golden, Wine and Yellow Bellflower were productive on drift sand. I do not believe the varieties fruiting in 1878 were those not fruiting in 1877.

Soil and Location.—I can see no difference in soils. Locations well sheltered were the most productive.

Diseases.—None but scab on some varieties of apples.

Grape Rot.—None.

Small Fruits.—Strawberries: Wilson's Albany and Downer's Prolific are productive. Blackberries: Kittatinny and Lawton. Raspberries: Miami and Ganargua are productive. Gooseberries: Houghton and Mountain. Currants: Red Dutch is productive.

Special Culture.—Strawberries should be well manured, and protected with coarse hay in winter. Blackberries succeed best on thin, heavy soil, and cultivated during the fore part of the summer only. Raspberries require the same treatment as blackberries. Gooseberries should be manured, cultivated and pruned. Currants, manured, and partially shaded in summer.

Forestry and Ornamentals.—Have been a success. Cottonwood and black walnut lead as the most desirable varieties. Honey locust and Osage orange are being grown.

Insects.—The codling moth is present. Borers: The apple, peach-tree and raspberry-cane species are all present. Against the first, cultivate the trees well; if in the trees, use the knife to destroy them. Tree crickets are present. Tarnish plant bugs can be driven away with smoke. The strawberry-leaf crumpler has entirely destroyed some plantations. The rose chafer has been troublesome in some localities. The curculio has been very damaging to the crop of early peaches.

RENO COUNTY.

BY A. S. DIMOCK, HUTCHINSON.

Wood Growth.—Apple, peach and plum, very large; pear and cherry, medium, and matured much earlier than usual.

Crop.—Apples and pears, not of sufficient age to fruit; peaches and cherries, heavy; plums, medium, of native varieties. Cherries fruited only in 1878; peaches, in both 1877 and 1878.

Soil.—Sandy loam most productive.

Diseases.—None have appeared.

Grape Rot appears at no other time than during the forming and hardening of the seed.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, productive; Colonel Cheney and French's Seedling reported worthy. Blackberries: Kittatinny, productive. Raspberries: Black Caps, productive; Turner, favorable. Gooseberries: Houghton, Pale Red, productive. Currants are not productive.

Means Used in Culture.—Strawberries: Cultivation in summer, mulched in winter. Blackberries: Heading back the canes. Raspberries: Same as for blackberries. Gooseberries should be pruned and cultivated. Currants, where shaded, produce light crops.

Forestry and Ornamentals.—Planting of leading forest and ornamental trees and shrubs has been successful this year. No failures observed, where proper care has been given. Variety most desirable for forest, cottonwood; for shade, box elder. There prevails a disposition to ornament home surroundings with trees and flowers.

Insects.—Borers—Very few among apple, but very plenty among peach trees. The raspberry species has been found here. There is a new borer, damaging the cottonwood trees. Remedy: The knife is the safest means for relief.

Varieties of Fruit Planted, not Reported for 1877.—Apples: Early Harvest, Red Astrachan, Carolina Red June, Maiden's Blush, Rambo, Yellow Bellflower, Wagener, Winesap, Missouri Pippin, Ben Davis, Dominie, Northern Spy, Stark, White Winter Pearmain, Willow Twig, Rawles Genet. Peaches: Crawford's Early, Hale's Early, Amsden, Alexander, Early Beatrice, Crawford's Late, Old Mixon, Columbia. Pears: Bartlett for a standard, Duchesse de Angouleme and Louise bon de Jersey for dwarfs. Plums: Wild Goose, Lombard. Cherries: Early Richmond, a few Dukes and sweet varieties. Strawberries: Colonel Cheney. Blackberries: Kittatinny. Raspberries: McCormick (*syn.* Mammoth Cluster). Gooseberries: Houghton. Currants: Cherry, Red Dutch.

REPUBLIC COUNTY.

BY J. A. MOSHER, BELLEVILLE.

Wood Growth.—Apple, peach, pear, plum and cherry trees, extra large, and well matured.

Crop.—Apples, good, for age of trees; heavy, and very fine; pears, none; plums, heavy of Lombard, Miner, and Wild Goose; cherries, Early Richmond, Coe's Transparent, and Kentish.

Apples bearing a Crop in 1878.—Cooper's Early White, Carolina Red June, Maiden's Blush, Winesap, Rawles Genet, and Ben Davis.

Soil and Location.—Dark rich loam, having some sand in its composition, with a yellow-clay subsoil, upon high lands, sloping northerly, has been the most productive.

Small Fruits.—Strawberries: Col. Cheney, Wilson's Albany, and French's Seedling. Blackberries: Snyder, Kittatinny, and Western Triumph. Raspberries: Turner, Philadelphia, and McCormick. Gooseberries: Houghton and Downing. Currants: Cherry and White Grape.

Special Culture.—Strawberries: Liberally manured, and sheltered in winter. Blackberries: Mulch in winter, and let it remain through the summer; check the summer growth by pinching off the tips of the canes. Raspber-

ries: Cultivate early, and mulch heavily; protect in winter by banking earth around the crowns. Gooseberries: Cultivate, and manure heavily. Currants: Manure and mulch heavily.

Forestry and Ornamentals.—All kinds have been successful. Black walnut or sycamore the leading varieties.

Insects.—Apple and peach-tree borers and the twig borer are present.

RICE COUNTY.

BY J. B. SCHLICHTER, STERLING.

Wood Growth.—Apple, peach, pear and plum, rather heavy, and matured some earlier than usual.

Crop.—Apples—no trees of bearing age; peaches—a few trees of bearing age—crop light, owing to frost in April; plums, native varieties heavy; cherries, light—but few trees of bearing age.

Varieties of Peaches Fruiting in 1878.—Crawford's Early, Crawford's Late, Hale's Early, and Amsden's June.

Location and Soil.—Upland clay loam is the most productive.

Grape Rot has not appeared in this section.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany fruited this season, for the first time. Blackberries: Kittatinny, a heavy crop. Raspberries: Black Caps succeed; McCormick leads. Gooseberries: Houghton productive. Currants: Where tried, have failed; shade has not been tried, to my knowledge.

Forestry and Ornamentals.—Planting has been successful this season; no failures, except in evergreens. The black walnut is most desirable. There is a decided strengthening in the faith and work of our people as to the success of tree planting.

Insects.—Borers are prevalent in the peach trees only. Remedy: The knife and probe are the most reliable means for relief. Curculio are present in limited numbers.

RILEY COUNTY.

BY PROF. E. GALE, MANHATTAN.

Wood Growth.—Apple, peach, pear, plum and cherry was large, and matured at the usual time.

Crop.—Apples, light; peaches, very light; plums, none; cherries, medium.

Diseases.—There has been no blight or any other disease, this year.

Grape Rot.—None observed in this county.

Small Fruits.—Strawberries: Very productive; varieties, Wilson's Albany and Charles Downing. Blackberries: Very heavy crop; variety, Kittatinny. Raspberries: Full crop; varieties, McCormick, Doolittle, Turner, and Philadelphia. Gooseberries: A moderate crop; variety, Houghton. Currants: Red Dutch and White Dutch; all grow well.

Forestry and Ornamentals.—All plantings have been a success this year. The cottonwood, on high prairie, with age, shows signs of decay at the top. I prefer the black walnut to all others for general purposes. There is an increasing disposition among the people to plant more extensively for shade and ornament.

Insects.—The codling moth is present. Borers: None but the flat-headed apple-tree species are troublesome. The tree cricket and tarnish plant bug are present; also the curculio.

New Seedling Fruit.—There are a number of seedling apples and a peach that originated in this county, which may prove worthy of recommendation.

SALINE COUNTY.

BY JONATHAN WEAVER, SALINA.

Wood Growth.—Apple, peach, pear, plum and cherry has been extra, and matured at the usual time.

Crop.—Apples, heavy, where the trees were of fruiting age; peaches, heavy; pears, very few bearing trees; plums, medium; cherries, heavy. Among apples, the Winesap, Ben Davis, Rawles Genet, Missouri Pippin, Jonathan, Gilpin, Rambo and Maiden's Blush were the most productive.

Soil and Location.—Sandy loam is the most productive. Bottom land is best for apples, and high prairie for peaches.

Diseases.—None observed.

Grape Rot.—None observed. The vineyard noticed is on a northern slope, high prairie, sandy loam, subsoil stirred to give drainage; vines, Concord and Clinton, age five to eight years; protected by a grove of trees on the east, north and west, and a blackberry thicket on the south.

Small Fruits.—Strawberries: Productive; Wilson's Albany leads. Blackberries: Very productive; Lawton leads, Kittatinny next. Raspberries: Succeed; Purple Cane leads, Philadelphia next. Gooseberries: Houghton and Pale Red are very productive.

Special Treatment.—Strawberries: Mulch in winter, and protect from south winds in summer. Blackberries and raspberries are more successful if partially shaded. Gooseberries do best when properly pruned. Currants, when shaded, give encouragement of success.

Forestry and Ornamentals.—Have been very successful. Ash, walnut, mulberry, coffee bean and elm are preferable, in the order named. A strong disposition is prevalent to plant to the extent of means.

Insects.—The codling moth is present. Borers of all kinds, except the raspberry species, are present, but not as numerous as in years past. A sharp knife and wire probe are the means used for their destruction; and to prevent their attacks, wash the trees with a preparation of one-third soft soap, one-third fresh-slaked lime and wheat flour, thinned with water to the consistency of common paint, and apply with a brush. The tarnish plant bug and curculio are present.

Varieties of Fruit Introduced during the year.—The Lawver apple, Amsden June and Alexander peaches, Wild Goose plum, and Snyder blackberry.

Several new seedling peaches, originating in this county, have been brought to public notice, and are promising.

SEDGWICK COUNTY.

BY J. G. SAMPSON, EL PASO, AND WM. M'CRACKEN, SUNNY DALE.

Wood Growth.—Apple, peach, pear, plum and cherry has been strong, and matured at the usual time.

Crop.—Apples, heavy, considering age; peaches, heavy; pears, good; plums, heavy; cherries, very good.

Varieties which have borne a good Crop this Season.—Apples: Winesap, Gilpin, Missouri Pippin, Red Winter Pearmain, Ben Davis, Early Harvest, Carolina Red June, Maiden's Blush, and Cooper's Early White. Peaches: The general varieties. Pears: Bartlett. Plums: Wild Goose, Purple Egg, and Blue Gage. Cherries: Early Richmond, Belle Magnifique, Plum Stone Morello.

Location and Soil.—Lands sloping to the southeast, and sandy, are the most productive.

Diseases.—None have been observed among the orchards, except mildew on peaches, and premature dropping. Budded peaches were not affected with mildew.

Grape Rot appears at the time of "forming and hardening of the seed," and during very hot and wet spells. Do not believe that moisture of the ground alone is sufficient to generate and support the rot.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany is only moderately productive. Blackberries: Kittatinny and Lawton are enormously productive. Raspberries: Doolittle and McCormick could not do better. Gooseberries: The Houghton is productive. Currants are just com-

mencing to fruit. All classes need good cultivation and mulching. Currants fail, unless planted on the north side of a hedge or buildings.

Forestry and Ornamentals.—Planting has been successful. Cottonwood is the most desirable for rapid growth; black walnut and ash for general purposes. A general disposition exists among our people to plant for timber and ornamentation.

Insects.—The codling moth has not reached this county. Borers are found only in peach trees. A very few rose chafers and curculios are found.

STATISTICAL REPORT OF NUMBER OF TREES ALREADY PLANTED IN THE COUNTY.

	Number.		Acres.
Apples.....	70,187	Strawberries.....	56-10
Peaches.....	320,785	Blackberries.....	347-10
Pears.....	4,292	Raspberries.....	415-10
Cherries.....	41,429	Gooseberries.....	11
		Currants.....	11

New Seedling Peach.—A very promising early variety, by Arnold Moon, El Paso.

SHAWNEE COUNTY.

BY THOMAS BUCKMAN, TOPEKA.

Wood Growth.—Apple, peach, pear, plum and cherry trees has been equal to an average, and matured at the usual time.

Crop.—Apples, light; peaches, pears and cherries, medium.

Varieties that bore a good Crop.—Apples: Missouri Pippin and Ladies' Blush. Peaches: Hale's Early, Amsden June, Crawford's Early, and Crawford's Late; most of the budded varieties were productive. Cherries: Early Richmond.

Soil and Location.—I have not observed any difference in soils or locations, with reference to fruit fullness.

Diseases.—Pear blight has been very damaging. Scab on seedling peaches. Twig-blight was quite injurious among Winesap apple trees.

Grape Rot commenced about the time of "forming and hardening of the seed," and continued until the fruit was nearly ripe. It occurred during a saturation of the ground by rainfalls, and a high temperature prevailed in the atmosphere. The vineyard observed is located on high prairie, having a southern exposure, and good surface drainage. The vines are four years old, and were Concord, Dracut Amber, and Clinton. The last were most heavily injured.

Small Fruits.—Strawberries: Wilson's Albany productive. Blackberries: Kittatinny productive. Raspberries: Doolittle most productive. Gooseberries: Medium. Currants: A failure.

Special Culture.—Blackberries and raspberries are well cultivated, and

given a top dressing of unleached ashes. Have not used shade in the culture of currants.

Forestry and Ornamentals.—Have been successful; no failures from age, except the black locust. There is an increased disposition to plant more extensively the above classes.

Insects.—The codling moth is not prevalent. Borers are numerous in neglected orchards. Protection: Wash in May and July with a mixture of soap suds and carbolic acid, and carefully examine the trees, to destroy such as may escape the effects of the wash. Do not fail to give a careful examination to young trees brought from nurseries, before they are planted.

SUMNER COUNTY.

BY A. C. SMITH, WELLINGTON.

Wood Growth.—Apple, peach, pear, plum and cherry has been good.

Crop.—Apples, too young to fruit; peaches, a good crop—general varieties; plums, a good crop of the Wild Goose; cherries, a good crop of Early Richmond.

Location and Soil.—High, rolling, sandy prairie loam is the most productive.

Diseases.—None have appeared.

Grape Rot is not found in this section.

Small Fruits, varieties tested.—The Wilson's Albany strawberry, Kittatinny Blackberry, McCormick raspberry, Houghton gooseberry and Cherry currant are productive. The last should be mulched, and sheltered with a high board fence on the south.

Forestry and Ornamentals.—Planting has been successful. For all purposes, the maple is preferable. There is a disposition to plant for shade, shelter and ornamentation.

Insects.—The codling moth has not, to my knowledge, reached this county. Borers: An occasional tree has been damaged by them. Good and clean culture is beneficial as a prevention to the attacks of the flat-headed species.

WABAUNSEE COUNTY.

BY H. A. STILES, PAVILION.

Wood Growth.—Apple, peach, pear, plum, and cherry, large, and well matured.

Crop.—Apples, light; peaches, pears, plums, and cherries, heavy.

Varieties yielding a good Crop in 1878.—Apples: Ben Davis, Gilpin, Jonathan, Carolina Red June, Early Harvest, Westfield Seek-no-further,

and Grimes's Golden. Peaches: Hale's Early, Crawford's Early, Alexander, and Amsden. Pears: Bartlett, Howell, and Vicar of Winkfield. Plums: Wild Goose and Miner. Cherries: Early Richmond and Morello.

Varieties Fruiting both years, 1877 and 1878.—Apples: Ben Davis, Grimes's Golden, Jonathan, Hightop Sweet, Gilpin, and Maiden's Blush. Peaches: Hale's Early, Alexander, Crawford's Early, and Amsden. Pears: Bartlett, Howell, and Vicar of Winkfield. Plums: Mostly native varieties. Cherries: Early Richmond and Morello. Generally, the varieties yielding a crop in 1877 fruited in 1878, moderately.

Location and Soil.—No material difference has been observed in these respects.

Causes of Failure.—Heavy rains and wind during the period of blooming prevented fertilization and increased vigor in sap circulation, and caused premature dropping of the fruit.

Diseases.—Mildew affected seedling peaches.

Grape Rot develops at the period of forming and hardening of the seed, and is hastened by moisture and intense heat, accompanied with a still atmosphere. The cases observed cover almost all phases of soil and locations. The severest cases are on level ground. In my vineyard, the Clinton is an exception, as it suffers most, and is located on a dry hillside. The Concord, in my case, does not rot, though on a low, rich soil.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, Col. Cheney, and Green Prolific. Blackberries: Kittatinny, Lawton, and Missouri Mammoth. Raspberries: McCormick, Doolittle, and Davidson's Thornless. Gooseberries: Houghton. Currants: Red Dutch.

Means Used in Culture.—Strawberries: Mulching. Blackberries: Cultivation, and mulching during the ripening period, and summer clipping of the canes, cutting out all unnecessary shoots. Raspberries: Early cultivation, or mulching, and clipping, as for blackberries. Gooseberries: Cultivation or mulching, and partial shade. Currants: Shading on the south by a fence or stone wall is important to success.

Forestry and Ornamentals.—Wherever planted and cared for, they have been successful. Cottonwood, on the upland, fails from age. Honey locust is the most preferable variety. An increasing disposition to plant for comfort and adornment is manifest.

Insects.—Codling moth is found in some apple orchards. Borers: All species are prevalent, except the round-headed apple-tree borer, which is not plenty. Remedy: Use the knife and probe, and for protection apply a wash of soft soap, with lime and sulphur added, to the bodies of trees. A liberal supply of ashes around the base of peach trees is quite effectual. The tree cricket is common among peaches. Curculio: Fully one-third of the crop of peaches were made worthless, the past year, by this pest.

List of varieties of Fruit Planted, not Reported for 1877.—Apples: Stump, Myers's Crab No. 20, Cole (*syn.* Scarlet Perfume), Pound Royal, Cooper's

Early White, and Newtown Pippin. Peaches: Old Mixon Free and Yellow Rarieripe. Pears: Beurre Deil. Cherries: English Morello.

WASHINGTON COUNTY.

BY J. B. SNYDER, WASHINGTON.

Wood Growth.—Apple, peach, pear, plum and cherry trees has been remarkably large, and matured earlier than usual.

Crop.—Apples, medium; peaches, heavy; pears, medium; plums, a failure; cherries, medium.

Varieties of Apples producing a Crop in 1878.—Ben Davis, Rawles Genet, and Carolina Red June. Such varieties as were productive in 1877 were also productive in 1878.

Soil and Location.—Heavy soils, having some sand, and a northern slope, were the most productive.

Small Fruits.—Strawberries: Wilson's Albany,* with plenty of wild ones among them, to fertilize. Blackberries: Kittatinny and Lawton. Raspberries: Doolittle, McCormick, and the native varieties, which are as fine as any, when cultivated. Gooseberries: Houghton. Currants: Red Dutch, and a valuable native variety from the Plains.

Special Culture.—Strawberries: Mulch lightly. Blackberries and raspberries: Head back the canes in summer. Currants: Protect by a fence on the south side.

Forestry and Ornamentals.—Have been successful; none fail as they age. Black walnut is the most desirable for all purposes. There is an increasing disposition to plant, with the settlers of this county.

Insects.—The rose chafer has caused some trouble in years past. The curculio is very annoying.

New Fruit.—There are many fine varieties of new seedling peaches; also, apricots. The native raspberry, under culture, is producing fine results. The native strawberry, under culture, is excelling the tame in quality. The wild or native mulberry is being brought under culture for its fruit, which is much improved thereby.

* Undoubtedly incorrectly named Wilson, as that variety possesses strong staminate powers.—SECRETARY.

WILSON COUNTY.

BY G. B. BROWN, GUILFORD.

Wood Growth.—Apple, peach, pear, plum and cherry, medium, and well matured—earlier than usual. Some varieties of apples, pears and cherries made a second blooming.

Crop.—Apples, most varieties heavy; peaches, light; pears and cherries, heavy on old trees.

Varieties Bearing a Good Crop in 1878.—Apples: Winesap, Rawles Genet, White Winter Pearmain, Milam, Red Winter Pearmain, Ben Davis. Late spring frosts destroyed much of the young fruit.

Diseases.—Premature dropping of the fruit.

Small Fruits, varieties tested.—Strawberries: Wilson's Albany, Green Prolific. Blackberries: Kittatinny. Raspberries: McCormick. Gooseberries: Houghton.

Forestry and Ornamentals.—Planting has been successful; none failed except evergreens, hemlock and balsam fir. There is an increasing disposition to plant, among our people.

Insects.—The codling moth has been found this season for the first time. Borers prevail among the apple and peach trees; the flat-headed species only in the apple tree. Remedy: Knife and clean culture. Curculio—Plums and peaches were rendered almost worthless by this insect.

WOODSON COUNTY.

BY W. W. SMITH, NEOSHO FALLS.

Wood Growth.—Apple, peach, pear, plum, and cherry, medium. The varieties making a second growth were the Wagener and Northern Spy.

Crop.—Apples, light; peaches and plums, heavy; pears and cherries, medium.

Varieties which bore a good Crop in 1878.—Apples: Carolina Red June, Maiden's Blush, Gilpin, and Summer Queen. Peaches: Crawford's Early and Crawford's Late. Pears: Duchesse de Angouleme. Plums: Wild Goose and Miner.

Varieties which Fruited both in 1877 and 1878.—Apples: Carolina Red June, Summer Queen, Maiden's Blush, Rawles Genet, and Gilpin. Pears: Duchesse de Angouleme.

Location and Soil.—Cannot discover any difference in results. Causes of

non-productiveness of leading varieties: Heavy winds and storms during the fertilizing period.

Diseases.—Twig-blight, rot, and premature casting of the fruit.

Small Fruits, varieties tested.—Wilson's Albany strawberry, Kittatinny blackberry, McCormick raspberry, Pale Red gooseberry, and Red Dutch Currant, are productive.

Means Used in Culture.—Strawberries: Mulching in winter. Blackberries: Heading-in canes in growing season. Gooseberries: Heavy pruning and mulching. Currants: Sheltering from summer sun.

Forestry and Ornamentals.—Planting has been a success. The black locust fails from attacks of borers. No varieties have failed from age. The leading variety for all purposes is the cottonwood. There is an increased disposition to plant for timber and ornamentation.

Insects.—The codling moth is becoming prevalent. Bonfires in the orchard are used to allure the female to destruction. Borers: Only the flat-headed species have been troublesome. Remedy: Those in the trees should be cut out. Ashes thrown around the base of peach trees are a good prevention. Tree crickets have been noticed. The rose chafer has been very annoying and destructive in the last five years.

New Seedling Apple.—By Robert Mowry; very promising.

List of varieties Planted, not reported for 1877.—Apples: Bentley's Sweet, Benoni, Hightop Sweet, Nickajack, American Summer Pearmain, Kansas Keeper, Roman Stem, Skinner's Pippin, Jonathan, Pryor Red, and Roxbury Russet. Crabs: Hewes, Hyslop, and Transcendent.

WYANDOTTE COUNTY.

BY W. W. DICKINSON, WYANDOTTE.

Wood Growth.—Apple: Heavy in fore part and light in the latter part of the season. Peach: Fruiting trees, moderate; young trees grew rapidly. Pear and plum: Moderate. Cherry: Old trees, light; young trees, good. All classes matured earlier than usual.

Crop.—Apples, light; peaches and pears, medium; plums light; cherries, heavy.

Varieties that produced a good Crop in 1878.—Apples: Yellow Bellflower, Early Harvest, and Golden Sweet. Peaches: General varieties. Plums: Damson and Wild Goose. Cherries: General varieties. Such trees as failed in fruiting in 1877 were generally productive in 1878.

Location and Soil.—Low, rich grounds, well sheltered, with southeast exposure, have been most productive. The non-productiveness of leading varieties in 1878 is attributed to over-bearing in 1877, which reduced the

trees to such a low condition of vitality as to prevent the formation of perfect fruit buds.

Diseases.—Twig-blight, light, and premature dropping of fruit.

Grape Rot.—Some vineyards are attacked by this disease at the ripening period. It appears at seventy to eighty degrees; with a higher temperature, and accompanied with wind, it declines. The vineyard observed is located on rich, loamy soil, having natural drainage, and a southeast exposure; age, two to eight years.

Small Fruits.—Strawberries: Wilson's Albany productive. Blackberries: Lawton productive. Raspberries: Improved Black Cap productive. Gooseberries: Houghton productive. Currants: Red Dutch moderately productive.

Special Culture.—Strawberries: Rich soil, and mulched with short straw. Blackberries and raspberries: Clean and pruning. Currants: Clean cultivation, and shelter by a high board fence. Cannot advise planting them under trees.

Forestry and Ornamentals.—Have been successful; none fail with age. Soft maple is the most desirable for all purposes. The disposition to plant is increasing.

Insects.—The codling moth is prevalent. The raspberry borer has been found in neglected grounds. A few tarnish plant bugs were found last season. The curculio has been very damaging, and the cost of protecting our fruits against them is too great to justify the effort.

MISCELLANEOUS PAPERS.

FRUIT GROWING ON THE PLAINS.

BY W. E. FOSNOT, ELLSWORTH.

It is with pleasure I add my mite to the growing interest in fruit growing, and while we are young in years, yet we of the central west feel like *giving* and receiving in turn.

When I first went to Ellsworth county (spring of '71), fruit growing was one of the unknown things, and considered one of the *positive* failures. I took a homestead, and determined to have some fruit or quit the business of attempting to make a living by farming. Everything was new. It seemed that the few "old settlers" had given up in despair, there being at that time perhaps not over a dozen fruit trees in the county, if indeed so many. It looked "blue" enough to me, and it was with considerable doubt that I went to work, believing that trees *would* grow if they had reasonably good care. My commencement was with yearling apples, a few May and Morello cherries, a few Wilson strawberries, Concord grape vines, with a few little peach sprouts, that came from seed brought with us. All was set in newly-broken sod ground, and I began to congratulate myself that fruit growing would yet be a success, when a herd of Texas cattle swept over my little plantation, and nearly destroyed it. I finally had to change location with what I saved, and lost some of my trees in transplanting to higher ground. I planted a bed of Green Prolific strawberries, a rod wide and some three rods long, which made an exceedingly good growth of vines, but finally lost them, from not giving them the attention they should have had during the dry part of the season, and in part from the ground being rather too sandy. Since changing my strawberries to ground underlaid with *clay*, or on clay subsoil, I find no difficulty in growing vines and fruit, even with the poorest care.

In '74, the grasshoppers put a check on the "good feeling" we had worked up in favor of fruit, and I felt as though I was swamped. I lost all my pears, with one or two exceptions, caused, as I believe, from exposure of the bark to the hot rays of the sun after being stripped of their leaves. Numerous have been the causes to dampen our ardor in fruit growing; but to-day the orchards in our county are numbered by acres, and we *know* fruit *will* grow if half-decently cared for. I have successfully grown three or four kinds of currants by *heavy mulching*. May and Morello cherries are in

bearing. I have not been successful on my grounds with grapes, although there are many in the neighborhood who *are* successful. Houghton and American Seedling gooseberries are successfully grown. Wilson, Kittatinny and Iowa blackberries are a success. Black Cap raspberries are a success. Quinces have not fruited yet, but are making a healthy growth. Damson and blue plums are making a good growth, but have not fruited. The finer classes of cherries died entire. Roses succeed with *very* little attention. Snowballs have proved a failure, with the ordinary care usually given. I think they will succeed by mulching. My experience leads me to believe that the western portion of the State will, in the near future, outstrip the eastern, in the item of numerous and prosperous orchardists. We are receiving the benefits of the experience of the fruit growers in eastern Kansas, and there is an extensive desire to secure the reports of the Horticultural Society, or to have access to them. We need means to procure for those who wish to plant fruit such information as will enable them to obtain such trees as they need. Our portion of the State is constantly besieged by hungry tree agents, who are a curse to the community, for the simple reason that in hundreds of instances old nursery stock is being shoved upon us, and the fraud will only be found out when too late. There are thousands of poor people in the western counties who do not know of the existence of the State Horticultural Society, nor of the valuable information contained in the reports of that society; and if there *could* be something done by the Society to *KEEP* before the new settlers in the west the information that is desirable for them to know, in the way of kinds of fruit to plant and proper methods of caring for them, habits of the trees, whether wide-spreading tops or close, high-top trees, distance to plant, varieties for family and market, color of fruit, cooking and eating varieties of apples, the extreme caution necessary in purchase of *pears* and other fine or tender fruits, and prices of trees and plants, a *vast* amount of good would be done. From a careful observation of the canvass by fruit-tree peddlers in this section of the State, there has, the past season, been no less than \$25,000 worth of orders taken, a goodly portion of which has been delivered, and *for* which the purchasers have paid *more than one hundred per cent.* more than they should have paid; and hundreds of them don't know a single, solitary thing of the kinds bought, and *won't* know until too late to remedy the evil. The Legislature ought to pass a law prohibiting "tree agents" from canvassing in the State, unless holding a *certificate from the Secretary of the State Horticultural Society, and signed by him*, showing the nursery he represents, and that it is responsible for the "tree agent's" acts, and should compel the tree agent to carry with him a complete list of the varieties recommended by the State Horticultural Society, which list should be presented to each purchaser for examination.

HORTICULTURE ON THE PLAINS.

BY M. ALLEN, HAYS CITY.

When your Secretary wrote and asked me for a paper with the above caption, I might have said we have none; and to his suggestion that the paper be made historical, I might well have said that the horticulture of this mystic region is scarcely yet begun—its history belongs to the future. However, this will depend on what we choose to call the "Plains." They used to reach from the base of the Rocky Mountains to the timber regions of the East, then to the Mississippi, and later to the Missouri; but Pike, the first intelligent explorer of the Louisiana country, placed the imaginary line near the head of the beautiful valley in which we are now assembled. Since that the line has been pushed to the sixth principal meridian, and by many probably further west. But for the purpose of this paper we will consider the region in question as extending east of the mountains as far as the short or buffalo grass predominates, being 400 miles or more in width and twice as long, embracing considerable more than one-half of the State of Kansas. My location is about one hundred miles out into this district from the middle of its eastern border, or where the Kansas Pacific Railway crosses the 99th meridian of west longitude, at Hays City.

It is said the first attempt to cultivate the "Plains" was made at Hays City, in 1867 or '68, when a writer said: "Our little town is surrounded on every hand by Indians and buffalos, and the chief amusement of the people is running after the one or from the other." He also wrote: "I fenced in five acres of land on the bottom, between town and the fort. The simple plowing cost me \$150. All the available plows were broken in trying to break the stubborn sod. The season was very dry, with no rain for a long time. The effort at culture was a failure, and the gardener who was to share in the crops took a foot passage with a Mexican train for the south." About this time Prof. Agassiz was invited to visit the Plains. He did so, and after carefully examining the soil he affirmed "that it was eminently adapted to the culture of wheat," and predicted "that this plain district would yet become the leading region of the world for the production of that cereal." Since 1874 this prediction of Agassiz is rapidly approaching fulfillment. And I would here like to submit these queries: Is not a good wheat soil also a good fruit soil?—and in a climate where winter wheat flourishes, can it be very bad for fruit?

When I first visited this country, in 1872, I found two cottonwood trees had been planted in front of the hospital at Fort Hays (these are yet in good condition), and two or three acres of forest trees, in nursery rows, on the experimental grounds of the Kansas Pacific Railway at Ellis, in the

western part of our county. These trees seem to have failed from time to time, so that but very few if any of them now remain.

In the spring of 1873 I forwarded a considerable collection of trees and shrubs from northern Illinois, and in 1874 I obtained from J. C. Teas and others what made out quite a large list of trees, plants and shrubs. This was the season of drouth and grasshoppers, when every green thing perished—not only all my trees and shrubs, but such things as rhubarb, asparagus and horseradish were also completely wiped out. Two or three others who planted moderately this season fared no better. My grounds had not been well selected, my sorts were not all that they should have been, and I was not on the ground in person. Another just such a season would not produce the same results, as I am now situated; neither can just such a condition of things ever again occur. Our immense herds of buffalo had but recently (that is to say, in the past three or four years) been slaughtered and driven away. Three hundred acres would have covered all the breaking in the county; the surface of the ground was hard, and would shed rain nearly equal to a shingle roof; the excessive drouth caused it to crack, and a long, protracted rain in September gave it a deep and complete soaking. The following winter was a severe one, freezing three or four feet deep. This seemed to break up the crust, and to radically change the texture and somewhat the color of the soil. Its original condition can only be partially regained in a small way by close herding of stock on a piece of ground in wet weather.

Notwithstanding these discouragements, in the spring of 1875 P. W. Smith and myself procured some trees and vines at Lawrence. The trees brought us borers, and the vines were dead. Everything planted this season in good order grew well, and I have planted more or less each season since, with the most gratifying results, except one thing: the first frost, or rather freeze, in the fall of 1877, killed outright several sorts of my peach trees and injured some others, leaving only one or two sorts apparently uninjured, so they bloomed the following spring. No other trees were in the least injured, and my friend Smith's peach trees, with less or more moderate culture, almost entirely escaped this disaster. We have already had gooseberries, strawberries, raspberries, grapes and peaches to taste, and expect soon to have all these to eat, and apples too. Pear and plum trees seem to grow as well as anything else in the fruit-tree line; in fact, wild plums grow and bear very profusely in many places on the Plains. I have gathered very fine ones, as well as wild grapes, near the 100th meridian of west longitude, 38° 30' north latitude, where herds of wild horses have, until recently, ranged undisturbed.

On forestry I have to say, that much land is being taken and held under the "act to encourage the growth of timber on the Western prairies," and much information is needed by our people on this subject as well as on fruit growing. I have trees of the cottonwood, grown from cuttings in 1875, now four inches in diameter and fifteen feet high, and many thousands, on a tim-

ber claim—small one-year seedlings, planted in 1876—that are now two and one-half to three and one-half inches in diameter, and ten to fifteen feet high. Ash is our best native wood, but, like other good things, comes slow. The box elder probably does as well here as anywhere; the honey locust is good; sycamore and our native mulberry promise well. The hackberry and red elm are among our best native trees to plant. They both grow on our dryest and most barren spots, and both take kindly to good soil and culture, and, with these advantages, grow quite rapidly. The soft maple and white and golden willows are not so highly esteemed here as further east, but we have native willows that are next to the cottonwood as rapid growers, and they may prove to be worthy of propagation.

I desire to also say a good word for the Osage orange as a timber tree on the Plains. It must not, however, be planted among corn, as most of the others may. The Osage will not endure shade. For hedging, with us it is a grand success. It requires, however, here as elsewhere, clean and careful culture for the first one or two years after planting. This is a southern tree, and I apprehend that some of our best contributions in sorts may come from that direction. While in the north, we looked for sorts that were hardy in the winter. Here, summer hardiness will be found quite as essential; and this quality of summer hardiness must be looked for in the south. The field is a large one for experiment, and much time and effort are being wasted by our people.

We ought to have a testing-ground or school of horticulture well out on the "Plains." Large bodies of school lands have been selected, mostly in Ellis county, in lieu of sections 16 and 36, on the Pottawatomie reserve. We ought to have some consideration in return. What better could the State do for us or for itself, in fact, than to inaugurate measures for such an institution on a grand scale? As all the State institutions thus far have been located in the eastern third of the State, now let us have a new and useful one in the west. The country is now fast filling up, and needs something more than individual enterprise in this direction, and we hope to not cry to you in vain. Our population is already too dense to rely on our flocks and herds; we must raise forests and fruits as well as cereals and vegetables, and the great question is, How are these things to be done? There is no longer any doubt about our soil or the amount of our rainfall; but the peculiarities of our climate and its effect upon vegetable growth, insect enemies, etc., should be closely looked after by men of science in the field and testing-grounds, that ought to be established as part of a horticultural school for all this plain district.

Such I conceive to be some of the means to be used to send the "*treeless Plains*" to where the "*Desert*" has already gone.

REVIEW OF TREE PLANTING IN THE ARKANSAS VALLEY BY THE A. T. & S. F. R. R.

BY C. H. LONGSTRETH, FORESTER, HUTCHINSON.

In reply to the request for a review of our work in forest-tree growing along the line of the Atchison, Topeka & Santa Fé Railroad, I will begin by saying, that the said Railroad Company, at the completion of the road to the west line of the State, in 1872, finding a large portion of their land grant in what is termed "the treeless Plains," and believing it to be an all-important matter to take some action in solving the question whether trees would grow on those plains, in the fall and winter of 1872 and 1873 entered into arrangements with Prof. S. T. Kelsey, whereby he was to experiment in tree-growing at different points along the line of said road.

Mr. Kelsey commenced this work in the spring of 1873, I commencing at the same time as foreman for him. When I came on the ground, Mr. Kelsey had already located his experimental stations, as follows: The first at Hutchinson, the second at Ellinwood, the third at Larned, the fourth at Speareville, the fifth at Pierceville, and the sixth at Syracuse. Everything being in its natural state, *i. e.*, the prairie unbroken, we could do but little more during 1873 than to prepare the ground for future work. We did, however, plant quite a number of trees and seeds at the first four stations in the spring of 1873, which did remarkably well, considering the circumstances.

In the spring of 1874 we planted quite extensively on all our grounds. The spring being favorable, the trees and seeds all started off nicely, and promised well; but later in the season it came on very dry and continued so, the season of 1874 being known as the "drouth year" throughout the State. Notwithstanding the dry weather, our trees all seemed to stand it very well, and by keeping the plows and cultivators running, we felt very sure we could bring them through all right. But to cap the climax, about the middle of July the grasshoppers came down upon us, and for a time threatened to take all. Mr. Kelsey, till the 'hoppers came, kept up all courage and had entire faith in his work; but, upon their appearance, I noticed for the first time that he seemed a little "blue." We accepted the situation, however, and concluded to stick to it. In the fall, after the 'hoppers and dry season had done us all the injury they could, we found, after looking over the grounds, that most of the trees were alive—had made a good growth, and promised to come out in fair condition in the spring.

During the fall and winter of 1874 and 1875, the Railroad Company found they were getting, as they thought, very poor, and began to cut down expenses all around. Mr. Kelsey, already thinking the amount he was allowed to carry on the work with was too small, when the Company reduced

the amount concluded he could do nothing with so small a sum, gave up, and left in the winter of 1875.

The Company still wishing to keep the work up, entered into arrangements with me, whereby I took full charge of the business March 1st, 1875. I knew full well that the amount they were willing to allow was very small to carry on the work, but, through the solicitations of Mr. Kelsey and others, I took hold of it, and have continued with it until the present time. I have had to study economy; have had to work hard to make it win; but have so far made a success of it. Upon taking charge, I was compelled to change my plans somewhat from those provided by Mr. Kelsey. He was experimenting with every tree he could get; but I had to give this up, and confine myself principally to the growing of our native trees. I also abandoned, for the time being, the two western stations, and gave my whole time to the first four.

Notwithstanding the dry season and grasshopper raid of 1874, our trees came out in the spring of 1875 in very fair condition. The 'hoppers not having deposited any eggs in this section in 1874, we did not suffer from them in 1875. In fact, since I took charge of the work in March, 1875, the seasons have been favorable to tree growth. The grasshoppers made a raid on us again in 1876, damaging the trees to some extent. Aside from this, the conditions have been favorable for tree growth upon our experimental grounds, and the results of the work have been all that could be reasonably expected. While we have a great deal to learn yet in this tree-culture problem in western Kansas, there are some questions that are now settled beyond any dispute. When these experiments were begun, many people were doubtful whether trees would grow in this country at all, especially the western portion. I think we have practically settled that question, for the trees are here to-day, ready as living witnesses to testify to the fact. The trees now growing on our grounds comprise the following list: Box elder, green ash, cottonwood, honey locust, black walnut, white elm, Osage orange, gray willow, silver maple, hackberry, ailanthus and catalpa. Of evergreens, there are the Scotch and Austrian pine. Of the trees tried, but not successful so far, are the American and European larch and the American chestnut.

The conditions have been such as to put the trees to severe tests. There has been no extraordinary work done with them: they have simply been planted and cultivated well. It has been asserted that we irrigated some of our grounds: this is not the case. There has been no occasion for irrigation. The rainfall has been sufficient so far, and I believe will continue so.

Among the several varieties that have proved successful, we would recommend the following as the best for general planting: Cottonwood, honey locust, box elder, elms, black walnut, green ash, Osage orange; and for fuel and fruit, the peach. The above list we can rely on here. The silver maple

does well on low, heavy land ; but on sandy, light soils and the uplands it is not a success.

There are other trees of more or less value now being tested, which promise well, and may be planted by those who want a greater variety, or can afford the greater care and cost necessary to insure success ; among which might be named as worthy of attention the burr oak, hackberry, Kentucky coffee tree, ailanthus, catalpa and gray willow. Of the evergreens, the Scotch and Austrian pines are the only ones we have been successful with so far. However, not much attention has been given to this class of trees.

Our grounds contain some 20 acres in each place—about 80 acres in all.

Hutchinson is 180 miles west of the east line of the State. Elevation, 1,500 feet ; soil, light, sandy loam. Ellinwood is 215 miles west of the east line of the State. Elevation, 1,760 feet ; soil, black, sandy loam, rather heavy, with a tenacious subsoil. Our third location was changed from Larned to Garfield, which is 256 miles west of the State line. Elevation, 2,100 feet. Speareville, the fourth station, is 284 miles west of the State line. Elevation, 2,478 feet. This last station at one time went by the common name of "Dry Ridge." It is located away up on the highest uplands ; and while the trees have not grown so rapidly at this point as at the other stations, they have made a healthy and thrifty growth, and are doing well.

In conclusion, I will state that these experiments have been made in a part of the State pastured by buffalo in 1871 ; the trees have had none of the particular care usual in nurseries ; all the conditions have been such as to make the tests severe, so that any results attained should be reliable ; and so far as we may judge from our experience in this work for the past six years, these experiments justify the conclusion that forest trees may be successfully grown to the west line of the State, and probably to a considerable distance beyond. The results have stimulated our people to action in the growing of trees throughout this portion of the State, and have aided to keep before the public the subject of forest culture—a subject of vast importance, in view of the future wants of the whole country.

The following tables show the growth of some of our trees. I have not yet taken notes of the trees at Ellinwood.

<i>Name of Tree.</i>	<i>When planted.</i>	<i>Extremes of growth.</i>	<i>Average growth.</i>
Cottonwood.....	1873.....	30 to 36 feet.....	33 feet.
Box Elder	1873.....	12 to 18 feet.....	15 feet.
Black Walnut	1873.....	10 to 15 feet.....	12 feet.
Green Ash.....	1873.....	12 to 16 feet.....	14 feet.
Honey Locust	1873.....	10 to 15 feet.....	12 feet.
Silver Maple	1873.....	12 to 15 feet.....	13 feet.
Catalpa.....	1873.....	10 to 15 feet.....	12 feet.
Ailanthus.....	1873.....	12 to 18 feet.....	15 feet.
Peach	1873.....	12 to 18 feet.....	15 feet.

The above notes were taken in November, 1878, of a portion of the trees growing at Hutchinson, planted from seed.

Name of Tree.	When planted.	Extremes of growth.	Average growth.
Cottonwood.....	1875.....	12 to 18 feet.....	15 feet.
Box Elder.....	1874.....	10 to 12 feet.....	11 feet.
Black Walnut.....	1874.....	6 to 10 feet.....	8 feet.
Green Ash.....	1875.....	6 to 8 feet.....	7 feet.
Osage Orange.....	1876.....	4 to 7 feet.....	5 feet.
Gray Willow.....	1874.....	12 to 18 feet.....	15 feet.
Allanthus.....	1874.....	7 to 10 feet.....	9 feet.
Catalpa.....	1876.....	5 to 7 feet.....	6 feet.

The above notes were taken at Garfield, in November, 1878. All were planted from seed, except the cottonwood and willow; they from cuttings.

Name of Tree.	When planted.	Extremes of growth.	Average growth.
Box Elder.....	1878.....	8 to 10 feet.....	9 feet.
Black Walnut.....	1878.....	6 to 7 feet.....	6½ feet.
Green Ash.....	1875.....	8 to 5 feet.....	4 feet.
Osage Orange.....	1874.....	6 to 8 feet.....	7 feet.
Cottonwood.....	1877.....	7 to 10 feet.....	8 feet.
Gray Willow.....	1877.....	6 to 8 feet.....	7 feet.
Honey Locust.....	1878.....	9 to 12 feet.....	10 feet.

The above notes were taken in November, 1878, at Speareville. These trees were all planted from seed, at the dates named.

I will mail you a pamphlet that I have written, giving instructions in tree growing in this county. If any of your members want one, they can get it by addressing me at this place.

REPORT OF HORTICULTURAL EFFORTS AT BAXTER SPRINGS, CHEROKEE COUNTY.

BY N. D. INGRAHAM.

[NOTE.—This report covers the work of a period of many years, by one of the most thoroughly practical and intelligent horticulturists in Kansas, and the lists and experiences herein given will be valuable as a reference to persons who may plant in that locality in the future.—SECRETARY.]

I send the following list of fruit, forest, ornamental trees, etc., all of which I have grown as nursery stock, and those marked as fruiting I have now on my own grounds, as well as all the forest trees, successful evergreens, and the roses.

I know of no failures here in the quality of fruits. My numbers, from one to ten inclusive, ten being the highest success, refer to productiveness only.

I published in our county papers a call for the fruit growers to meet at

Columbus, but on account of the inclemency of the weather there were but two or three small growers present; therefore I am under the necessity of giving the results of my own experience and that of my neighbors, with the same varieties, on similar soils, topography essentially the same, and with like culture. I send you a list of cultivated varieties, with their comparative success.

I do not give new varieties originated in this county, as we have none except several varieties of early peaches in 1877, which, on account of the unfavorable season of the present year, have not been fully tested. They were all a few days earlier than the Amsden's June, medium sized, similar in flavor, clings and semi-clings. They originated in the grounds of Enoch Carter, Cyrus W. Harvey and Charles Woods. These varieties will probably be fully tested the coming season, as buds were freely distributed among our leading fruit-men.

Cyrus W. Harvey and Captain Hubbard, of Baxter Springs, are among our largest and most successful orchardists. They get their mail at our office, but Harvey lives five miles north of me, and Captain Hubbard six miles southeast of here. I select their orchards with mine as representative orchards, the soil and exposure all differing from each other. All are large orchards. I have between 4,000 and 5,000 bearing trees, Harvey probably as many, and Captain Hubbard I presume about one-half as many.

I have a vineyard of about 1,200 vines, set eight feet apart each way, trained to stakes five feet high; two and three canes up, according to strength of root; medium winter and summer pruning; ordinary cultivation, with occasional top-dressing of well-rotted stable manure. High, rolling prairie on bank of Willow creek, sloping east and south; soil, sandy, clay loam (red), mixed with gravel; subsoil, gravel, bed of creek, bastard lime rock (lime and flint). The grape crop was a failure last season, and a partial failure in 1876 and 1877. There were excessive rains in '76 and '77, which rotted the grapes in the early season; clusters imperfect. The growing season of the present year was extremely wet, and the maturing excessively hot and dry. The sudden and severe change finished the grapes. The result was the same on all soils, in every location, and with all kinds of treatment.

Apples and peaches do uniformly well. No very marked exceptions in the apple, except as indicated by my numerals. In peaches, the Yellow Alberge is the only exception. In ordinary years the side of the Alberge next to the sun dries on the pit; the other side good. Splendid in wet seasons.

Of the cherries, the Hearts, Bigarreaus and Dukes are a failure.

Pears in the immediate vicinity are subject to blight as marked. Cause to me unknown; probably some peculiarity in my soil or locality, as with the same culture the pear succeeds on other farms, notably in Mr. Harvey's orchard and on some farms near Captain Hubbard's. I cannot speak for

the county. It is my opinion, however, that the change from the wet spell in June to that of hot and dry in July and August was severe on most varieties of pears. It seriously injured currants in localities not shaded; also, many varieties of evergreens. Mulching is essential for both currants and evergreens. In ordinary seasons this is an excellent climate for grapes, affording ample rains during the growing season—April, May and June—a uniform and high temperature, with little or no rain during the maturing period—July, August and September. These climatic conditions give us grapes in perfection.

At the risk of being considered odd, if not silly, allow me to suggest that timber belts or screens, as a protection to orchards, are a delusion and a snare, originating in the fertile brain of nurserymen—of whom I have been one. Object, to sell deciduous and ornamental trees; arbor vitæ, Norway spruce and other high-priced trees being recommended as the most desirable. Plenty of sun and plenty of air are essentials to success. Take my orchard and the orchard of my late partner, Capt. Wm. Hyland, deceased: my old orchard, of 1,162 apple trees, is set thirty feet apart, *quincunx*, filled in with the same number of peach trees, surrounded by Osage orange hedge, four feet high, closely trimmed twice each year. In midsummer the temperature is from five to eight degrees higher inside than on the outside. The Captain's orchard is set in the same way, and is about the same size. It is inclosed with Osage hedge, not kept down until June of the present year. Inside, on the south side, he has a timber belt of soft maple, closely planted. He estimated the temperature of his orchard at from eight to ten degrees higher than mine. Both are too hot—his almost unbearably so in hot weather. I believe it injurious to fruit, and so did he. I would plant further apart, and give all the air I could. Let fruit-men discuss this.

I regret very much that ill-health prevents my visiting the orchards in this county, which would enable me to render a full and complete report.

BAXTER SPRINGS, Dec. 8, 1878.

[The tabular list of fruit trees, etc., grown in Cherokee county, accompanying this report, will be found on the two following pages.]

LIST OF FRUIT, FOREST AND ORNAMENTAL TREES, SHRUBS AND PLANTS, GROWN IN CHEROKEE COUNTY.

(Varieties left blank have not yet fruited.)

	Varieties.	Scale.*		Varieties.	Scale.
APPLES.			PEACHES.		
1	Astrachan, Red.....	10	1	Hale's Early (for market, 7).....	10
2	Bough, Sweet.....	10	2	Amsden's June.....	5
3	Bailey's Sweet.....	8	3	Troth's Early.....	4
4	Bellflower, Sweet.....	4	4	Crawford's Early (for market, 9).....	10
5	Bellflower, Yellow.....	4	5	Crawford's Late.....	5
6	Buckingham.....	5	6	Yellow Alberge.....	8
7	Black Detroit.....	6	7	Stump-the-World.....	5
8	Benoni.....	5	8	Heath's Cling.....	5
9	Baldwin (late in bearing).....	10	9	Heath's Free.....	5
10	Ben Davis.....	5	10	Morris White.....	5
11	Codlin, Keswick.....	8	11	Ward's Late.....	6
12	Cider, Smith's.....	5	12	Old Mixon Cling.....	7
13	Colvert.....	10	13	Old Mixon Free.....	4
14	Cooper's Early White.....	5	14	Large Early York (for market, 10).....	10
15	Dyer.....	5	15	Smock Free.....	5
16	Dominie.....	5	16	Jacques' Rareripec.....	3
17	Fallwater (late in bearing).....	5	17	Royal George (for market, 9).....	10
18	Fameuse.....	8	18	New York Rareripec (for market, 8).....	10
19	Fulton.....	5	19	Grosse Mignonne (for market, 8).....	8
20	Gemset, Rawles.....	8	20	Switzerland (for market, 8).....	10
21	Grimes's Golden (late in bearing).....	5	21	Snow Free (for market, 5).....	6
22	Gillflower, Striped.....	5	22	Snow Cling.....	5
23	Gravenstein.....	5	23	Bergen's Yellow.....	.....
24	Harvest, Early.....	5	24	Bellegarde.....	.....
25	Hocking.....	4	25	George the Fourth.....	.....
26	Huntsman's Favorite (late in bearing),	4	26	Druid's Hill.....	.....
27	Hightop Sweet.....	4	27	Foster.....	.....
28	Jonathan.....	10	PEARS.		
29	June, Carolina Red.....	5	1	Seckel (blights).....	10
30	King of Tompkins Co. (late in bearing).....	5	2	Bartlett.....	6
31	Lowell.....	10	3	White Doyenne (blights).....	.....
32	Limber Twig.....	9	4	Louise bon de Jersey.....	5
33	Milam.....	6	5	Howell (late in bearing).....	5
34	Mother.....	5	6	Lawrence (late in bearing; blights).....	.....
35	McAfee's Nonsuch.....	.....	7	Madeleine (blights).....	.....
36	Maiden's Blush.....	10	8	Stevens's Genesee (blights).....	.....
37	Nonsuch, Hubbardston.....	5	9	Buerre de Anjou.....	5
38	Northern Spy (late in bearing).....	5	10	Buerre Easter.....	.....
39	Ortley.....	6	11	Kingessing (blights).....	.....
40	Pryor Red.....	.....	12	Osbard's Summer.....	5
41	Peck's Pleasant.....	6	13	Vicar of Winkfield (blights).....	.....
42	Pennock, Early.....	9	14	Flomish Beauty.....	4
43	Pippin, Fall.....	10	15	Bufum.....	.....
44	Pippin, Newtown.....	5	16	Belle Lucrative (late in bearing).....	4
45	Pippin, White.....	10	17	Doyenne de Ete.....	.....
46	Pippin, Missouri (bears young).....	10	18	Swan's Orange.....	.....
47	Pearmain, American Summer.....	.....	19	Glout Moreau (late bearing).....	.....
48	Pearmain, White Winter.....	8	PLUMS.		
49	Pearmain, Red Winter.....	9	1	Yellow Egg.....	5
50	Queen, Summer.....	10	2	Washington.....	4
51	Quince, Cole's.....	4	3	Jefferson.....	5
52	Ramsdell's Sweet.....	5	4	German Prune.....	3
53	Roman Stem.....	10	5	Wild Goose.....	6
54	Red, Early.....	5	6	Chickasaw.....	6
55	Rambo.....	10	CHERRIES.		
56	Russet, Egyptian.....	5	1	Early Richmond (successful).....	10
57	Russet, Perry.....	5	2	Ohio Beauty (success).....	10
58	Russet, American Golden.....	5	3	Belle Magnifique (partial success).....	5
59	Russet, English Golden.....	5	4	Belle de Choisy (failure).....	.....
60	Russet, Roxbury.....	5	5	Royal Duke (failure).....	.....
61	Russet, New York.....	5	6	May Duke (failure).....	.....
62	Sops-of-Wine.....	.....	7	Reine Hortense (failure).....	.....
63	Swaar, Autumn.....	5	8	Napoleon Bigarreau (failure).....	.....
64	Swaar, Winter.....	.....	9	Elton (failure).....	.....
65	Seek-no-further, Westfield.....	6	10	Yellow Spanish (failure).....	.....
66	Spitzenberg (late in bearing).....	5	11	Black Tartarian (failure).....	.....
67	Wine, Fall.....	.....	12	Gov. Wood (failure).....	.....
68	Winesap.....	6	13	Early Purple Guigne (failure).....	.....
69	Wagener.....	.....	14	English Morello (success).....	10
70	Willow Twig.....	9	15	Common Morello (success).....	10

* Productiveness scale, 1 to 10 — 10 the highest.

Varieties.		Scale.	Varieties.		
GRAPES.			FOREST TREES—Concluded.		
1	Maxatawney.....	3	Honey locust.....	Fast grower.	
2	Eumelan.....	3	Honey locust, thornless.....	" "	
3	Catawba.....	5	Ossage orange.....	" "	
4	Isabella.....	5	Persimmon, American.....	" "	
5	Norton's Virginia.....	2	Persimmon, Japanese.....	" "	
6	Union Village.....	2	EVERGREENS.		
7	Delaware (not subject to rot).....	5	Red cedar.....	Indigenous.	
8	Clinton.....	10	American Arbor Vitæ.....	Fair grower.	
9	Dracut Amber.....	8	Pine, yellow.....	Indigenous.	
10	Concord.....	10	Pine, white.....	Successful.	
11	Hartford Prolific.....	6	Pine, Austrian.....	"	
GOOSEBERRIES.			Pine, Scotch.....	"	
1	Houghton.....	10	Norway spruce.....	Injured by drouth.	
2	Pale Red.....	10	Balsam fir.....	" " "	
3	Downing.....	10	Hemlock.....	" " "	
CURRANTS.			Europ. larch (semi-everg.)	" " "	
(Successful only when shaded and mulched.)			ROSES.		
1	White Grape.....	10	(Grown in open air, without protection in winter—common culture.)		
2	Red Dutch.....	10	Hybrid Perpetual.		
3	White Imperial.....	5	1 Gilbert Slater.....	Tender.	
5	Cherry.....	5	2 Victor Verdier.....	"	
STRAWBERRIES.			3 Edward Jesse.....	Hardy.	
1	Wilson's Albany.....	8	4 Arthur d'Sansal.....	"	
2	Large Early Scarlet.....	10	5 Madame Charles Crapulet.....	"	
3	French's Seedling (fine but tender).....	10	6 Baron d'Maynard.....	Tender.	
4	Green's Prolific.....	10	7 Baron Prevost.....	Hardy.	
7	Agriculturist.....	4	8 Marshal Vaillant.....	"	
8	Nicanor.....	4	9 Crystal Palace.....	"	
9	Jucunda.....	4	10 General Washington.....	"	
FOREST TREES.			11 Cornet.....	"	
American chestnut.....	} Healthy and rapid growers.		12 Viscompte Douglas.....	"	
Black walnut.....			13 Dr. Arnal.....	"	
Butternut.....			14 Giant of Battles.....	"	
Hickory.....	Slow grower.		15 Madame Eugene Cassignac.....	"	
Pecan.....	" "		16 Leopold Premier.....	"	
White oak.....	" "		Moss.		
Red oak.....	" "		17 Comtesse de Murinalo.....	Hardy.	
Sycamore.....	Strong grower.		18 Captain Ingraham.....	"	
Cottonwood.....	Rapid "		19 Madame Edward Ory.....	"	
Red elm.....	Very rapid grower.		June.		
White elm.....	Slow grower.		20 Madame Plantier.....	Hardy.	
Black cherry.....	Fair "		Climbers.		
Soft maple.....	Rapid "		21 Prairie Queen.....	Hardy.	
Black ash.....	Slow "		22 Anna Maria.....	"	
Mulberry.....	Fast "		23 Seven Sisters.....	"	

ORNITHOLOGY—A DEFENSE OF BIRDS.

BY J. W. ROBSON, CHEEVER.

(From the Dickinson County Chronicle of May 9th, 1879.)

Like other benefactors of the human family, birds come in for more than their share of misrepresentation and abuse. And, strange to say, many of those who traduce their character, and would proscribe them if they had the power, by charging them with theft, and therefore injurious to the farmer, are generally the men who never planted a strawberry bed or owned a cherry

tree. We seldom hear men complain who make a specialty of growing fruit; but the accusation generally comes from those who seldom see an orchard or own a garden of small fruits, and who never see the produce of such but at the dinner or supper table; and while they are eating the luscious fruit, which has never cost them a thought or one drop of sweat, as far as their culture is concerned, they raise a cry of indignation against robins and birds in general, as being the destroyers of cherries and other small fruits. We think this question can be easily settled. Ripe fruits have not a season of twelve months. Four weeks is about the extent of the cherry season. During four months our orchard and garden fruits ripen and are gathered. A few weeks suffice to garner our cereals. Now, the birds cannot fast the remaining eight months of the year, and survive. No, during two-thirds of the year, the birds are laboring for man; and he must be mean and selfish who would deny them a small quota of those fruits they have labored so faithfully to preserve. But let us look at the facts. An investigation of the stomachs of a few of our fruit-eating birds will settle this question conclusively.

The stomach of a robin in March contains worms, grubs and seeds; April, insects, worms and grubs; May, the same; June, the same, and fruits; July and August, all sorts of caterpillars and grubs; September, he has left us. The stomach of the thrush reveals the same contents. The red-headed woodpecker also steals our small fruits, yet the examination of his stomach proves the fact that ants and their larvæ, beetles and the larvæ of tree borers, tree caterpillars, mixed with fruit, are his chief food. At the close of the fruit season, he lives upon insect life alone.

Another bird that comes under the ban of the destroyer is the golden oriole. A close examination of his stomach will also show that he is the friend of the horticulturist. It contains beetles, moths, butterflies, curculio, chrysalids, grasshoppers, weevils, and fruit. In the month of August, he departs to his southern home.

The quail (gentle Bob White) is not a fruit-eating bird, living exclusively, as he does, upon grain, chinch bugs, ants, and terrestrial insects generally; and yet he is eagerly sought after and destroyed by trap and gun.

This bill of fare ought to satisfy every unprejudiced mind that the feathered tribes are not the enemies, but the friends of man. "The presence of the insect is universal; in the ubiquity of its numbers, legion." To this universal monster birth responds the bird, "incessantly active with the swiftness of his wing." The great moment is that, when the insect, developing itself through the heat, meets the bird face to face—the bird multiplied in numbers—the bird which, having no other sustenance, must feed at this very moment a numerous progeny with her living prey. Every year the world would be endangered if the bird could suckle—if its aliment were the work of an individual, of a stomach. But see! the noisy, restless brood, by six, ten or twenty bills, cry out, more, more! And the exigency is so great—such

the maternal ardor to respond to this demand—that even a little titmouse will carry three hundred caterpillars a day to satisfy its young. And even in the gloomiest months, when the sleep of nature so closely resembles death, we have birds who are actively engaged prying into the private affairs of the insect world, often laying waste the prospects of a promising family by one stroke of the bill, and hunting up insect life so diligently as to entitle them to the honor of being the friends and laborers of man.

We always expect sordid and grasping men to raise an outcry against the birds as being enemies to the agriculturist, and to be continually urging the repeal of those State laws which protect them from extirpation, the result of which would be the destruction of all fruits and every green thing, and thus desolation and famine would stalk triumphant throughout the land. We confess that we are both surprised and pained to find so many otherwise intelligent men commending their destruction. We think they are greatly in error, and hope in due time they will see their mistake and repent. As for ourselves, we believe that birds are nature's scavengers in the grove, the field, the orchard, the garden—everywhere; and he that kills one for mere sport or blind prejudice is a dangerous man in the community.

HORTICULTURE AND AGRICULTURE COMPARED.

BY G. M. WAUGH, GARDNER.

[NOTE.—This paper was read before the Douglas County Horticultural Society, by request of the author, and copies furnished to the *Kansas Farmer* and *Spirit of Kansas*.—SECRETARY.]

I desire to state in the outset, that I do not design, in the remotest degree, to say one word against or detract in the least degree from the interests involved in that important resource of our State, the pursuit of agriculture, with which a very large proportion of our people are so closely identified; but I desire to show that the horticultural interests of Kansas are of such vast magnitude that of right they should be treated with much higher consideration than has heretofore been conceded by our legislative department of the State. We, as horticulturists, define our field of work to be that of a proper culture of all kinds of fruits, flowers, and gardening, including both ornamental and forest trees, and specially as related to shelters for our orchards and home surroundings. Conceding this definition to be sufficiently comprehensive, I will state that the estimated value of all kinds of fruit for the year 1877, as found in the reports of our State Board of Agriculture for that year, are \$2,987,392.09. This was raised upon 112,710.58 acres of land, which is a yield of about \$26.50 per acre as a general average, which is none too high; that the value of that land, the stock of trees, etc., pre-

paring and planting of ornamental and forest trees, was \$7,496,482.90, yielding a revenue of nearly forty per cent., while the number of acres devoted to agriculture, including pasture and meadow, for the same year, was 6,538,727.85, which yielded products to the value of \$49,914,434.38, making a yield per acre of \$7.55.

According to the report above referred to for the year 1878, neither the number of acres devoted to horticultural purposes nor cost of stock is given—doubtless for good reasons. A general aggregate is, however, given of the fruits raised in our State, at \$4,866,587, and which is an increase over 1877 of \$1,879,195. This increase is very encouraging, when we take into consideration that the crop of 1878 was a light one. The number of acres devoted to agriculture in 1878 was \$6,538,727, on which were raised products to the value of \$49,914,434. This shows a yield of about \$7.60 per acre.

It is not surprising that where so large a portion of our people are engaged in agricultural pursuits, an agricultural department should have been created by legislative enactment and placed in charge of proper officers; yet it cannot be denied that a very respectable per cent. of those who are thus engaged are deeply interested in the efficient development of the horticultural resources of our State. The work for such development is in its infancy, but will increase geometrically as years go by.

With an average fruit crop in 1879, our horticultural products will not fall far short of \$8,000,000 in value, and may really exceed that amount. The addition of so many millions of wealth, resulting from the labor of the horticulturists of Kansas, becomes a matter of deep interest to the residents of our State, and deserves the fostering care of those whose duty it is to labor for the advancement of our material interests. A State Horticultural Society has been in existence some twelve years, and has been kept alive by its members, some of whom have impoverished themselves in their ardent desires to advance this laudable industry. Among the number who have rendered valuable and self-sacrificing service is that venerable pomologist, Dr. William M. Howsley, of Leavenworth. To his earnest and continuous labors are the people of Kansas largely indebted for the high state of prosperity to which that Society and the industry in our State have attained.

The records of that Society have been kept at a private residence, because of the lack of funds to procure a suitable office. Those records are becoming too valuable to the public to be deposited in such a manner, and should be placed in a place of comparative safety.

State appropriations have been granted heretofore for the publication of the proceedings of that Society to a very limited extent, and altogether too limited to meet the demands of this increasing interest in horticulture. An interest which brings millions of treasure annually to the people of our State should not be discouraged by lack of a just appreciation of its importance among our legislators. It is deserving of the consideration of a special committee in both houses of the Legislature, and the favorable notice of the

Executive of our commonwealth. It cannot be possible that those who are specially engaged in the pursuit of horticulture are the only ones who foresee the vast wealth which will result to our people in the near future, by a judicious and liberal encouragement of this very important branch of industry.

REPORTS STANDING COMMITTEES—CONTINUED.*

ENTOMOLOGY.

BY G. C. BRACKETT, LAWRENCE.

As a substitute for a report of the standing committee of this department, it is deemed advisable to introduce the following plates, with descriptions of the insects they illustrate, that many who are entirely uninformed may obtain a knowledge of some of the most common and specially noxious insects to the pursuit of horticulture, as well as others specially beneficial. The first class are subjects for destruction, while the latter should be carefully protected and their increase afforded every means of encouragement, as they assist us in the so-much-desired annihilation of the others, frequently becoming more powerful in that direction than anything within the control of man. This department is greatly indebted to Prof. C. V. Riley, late Entomologist of the Department of Agriculture at Washington, D. C., for cuts illustrating such as are here introduced; and descriptions are, by permission, taken mostly from his annual reports, made while fulfilling the duties of the office of State Entomologist of the State of Missouri.

INSECTS INJURIOUS TO THE INTERESTS OF THE HORTICULTURIST.

THE FLAT-HEADED APPLE-TREE BORER.

(Chrysobothris femorata.)

a, Worm or larva.

[FIGURE 1.]



b, Beetle.

This borer, which is represented in larva (worm) state at Fig. 1, a, may at once be recognized by its anterior end being enormously enlarged and flattened. It is paler than the round-headed species, makes an entirely different burrow, never acquires more than half the size of that species, and is almost always found with its tail turned completely around toward the head.

*These were not prepared in time for their proper place, owing to delay in obtaining cuts.—SEC'Y.

It attacks not only the apple, but the peach, pear, plum, cherry, soft maple, oak, mountain ash, linden, box elder, beech, (and I would add, elm and willow.—SEC'Y.)

ITS NATURAL HISTORY

Is briefly told: The beetle represented at Fig. 1, *b*, is greenish-black or bronze-colored, with metallic reflections, and the under side more coppery or brassy. The more characteristic features are two irregular, impressed, transverse marks across each wing-cover, dividing them into about three equal lengths. This beetle is diurnal in habit (that is, flies by day instead of by night), and may frequently be found basking in the sun on the trunks of those trees which it more particularly frequents. It begins to appear during the latter part of May, and is found all through the summer months. The eggs, which are pale yellow, are glued by the female by preference under the loose scales or within the cracks and crevices of the bark, several of them being not unfrequently found together; yet at times they are found laid on perfectly smooth bark, and under circumstances that would indicate that the beetle sometimes uses her jaws to puncture the tender bark so as to allow the insertion of the egg. The young larvæ hatching from them gnaw through the bark and feed upon the fiber, boring broad and flattened channels, and very soon girdling the smaller trees. When its jaws get stronger it usually bores into the more solid wood, working for a while upward, and when about to transform it invariably cuts a passage back again to the outside, leaving but a thin covering of bark over the hole. It then retreats, and after packing the excrement around it so as to form a smooth cavity, changes to the pupa state.

The pupa, at first white, by degrees exhibits the colors of the future beetle, and in the course of about three weeks the latter (beetle) gnaws its way through the thin bark door which, as larva, it had left, closing its passage-way. It is a singular instinct that teaches the larva, which has powerful jaws, to prepare for the exit of the beetle, which has much more feeble ones; and this instinct is most strikingly illustrated when the infested tree is surrounded with some covering like wire gauze, which is proof against even the jaws of the larva. In such an event, even though the wire touch not the bark, the larva will work its way through the latter and test in every conceivable way the resistance of the wire, and frequently succumbs in the effort to penetrate it.

The general impression is that this borer acquires its full development in a single year. Be this as it may, the larvæ are found of different sizes during late summer, and young ones may be noticed even in winter. In May they are mostly found full grown, or in the pupa state.

NATURAL ENEMIES.

Hidden as this borer naturally is within the retreat of its own making, it is nevertheless hunted and destroyed by woodpeckers, and is not without its

insect parasites. There are several parasitic insects which prove mortal enemies of the Flat-headed Apple-tree Borer, (but which will not be treated on in this report, as I am not prepared with cuts to suitably illustrate. At this time suffice it to say, that the little ants running up and down the trees are enemies of this borer, as also of many other insects unfriendly, and should always be encouraged and protected. If the burrows of either the round or flat-headed species are opened, these little helps, the ants, will soon find the worms, destroy them, and drag them forth for food.—SEC'Y.)

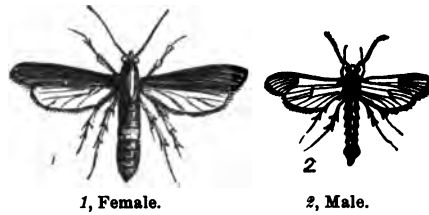
REMEDIES.

In treating of the means to be employed against this Flat-headed Borer, one important fact should be borne in mind—that the natural breeding-place of this insect is undoubtedly in the old decaying oaks of our woods; in fact, it prefers partially dead or injured trees to those which are thrifty and vigorous, and partly for this reason, and partly because rough, cracked barks form a better nidus for the female to lay her eggs. The species is most abundantly found on the southwest side of young apple trees, where it is most apt to get injured by sun-scald. Sickliness in the tree, injury from the whiffle-tree or other cause, therefore predisposes to its attacks. It is for this reason that transplanted trees, checked as they are in their growth, usually fare badly. But there is yet one other predisposing cause, which few people suspect, and that is reckless and careless pruning, especially of the larger branches. Many a fine orchard tree and many more city shade trees receive their death-shock from the reckless sawing-off of limbs, without any effort being made to heal the wounds by a coating of grafting-wax, clay, or other protecting substance. To such wounds this borer is attracted, and plays no mean part, where, had the wounded limb been properly protected, its presence would never have been known. It thus becomes of the first importance, in treating this insect, to keep the young trees vigorous and healthy, and the bark as smooth and free from injury as possible. Young trees are far more liable to be attacked than old ones, and consequently require greater care. As a preventive, nothing is better than coating the trunks and larger branches with soap, once towards the end of May, and again in July and August. Soap is not only obnoxious to the beetle, but it tends to keep the bark clean and smooth, so as to offer no attraction to the female, and is, withal, beneficial to the tree. The presence of the young borer is usually indicated by a discolored spot, a cracking of the bark, or the presence of sawdust-like excrement. But whatever preventive measures be taken, trees should be carefully examined late in the fall. It will pay to make an examination of the trees even before fall, for as early as the latter part of June, in the latitude of St. Louis, the newly-hatched worm may sometimes be found, just entering, when its presence is frequently indicated by an exuding drop of moisture on the bark, and when it may be destroyed by cleanly cutting out a small slice of bark.

THE PEACH BORER.

(Egeria exilis.)

Description by Cyrus Thomas, State Entomologist of Illinois.



[FIGURE 2.]

In their general habits, they resemble other wood-boring insects, in that they live on the substance of the wood, but never penetrate into the heart wood. Their presence may be known by the copious mass of thick gum mixed with their detritus (wood dust), and they are more generally in that part of the tree at or just beneath the surface of the ground, though sometimes in the crotches or other parts. They are reported as being found in plum and cherry trees, as well as peach. The eggs from which these borers are hatched are deposited the latter part of summer, upon the trunk of the tree, usually near its roots. When hatched, the larva (worm) eats its way downward in the bark and sap wood of the root, where it remains till the spring of the following season, when its course is towards the surface of the ground and the outside of the tree. In June or July it prepares a place of exit, and transforms to a pupa, in a cocoon composed of its chips and castings, mingled with gum, to come out as a mother in July or August. The two sexes of the moths differ enough to be easily mistaken for different species. The male (2, in Fig. 2) has both wings transparent, with the fringes and a band beyond the middle of the fore wings, and the body steel blue; the edges of the shoulder tufts and two narrow bands on the abdomen, pale yellow. It expands (wings spread) about an inch. The female (1, in Fig. 2,) expands about an inch and a half; has the fore wings, border of hind wings and body, opaque; dark steel blue throughout, except a dark-yellow band on the abdomen.

REMEDIES.

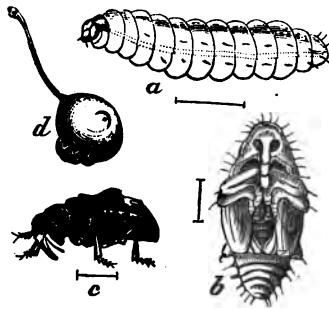
That of "mounding" is the most satisfactory, and has been practiced by some of our most successful fruit growers. To state the process briefly, in the spring, before the moths emerge (April), a bank of dirt a foot deep is thrown around the tree, and pressed firmly about the trunk. Each subsequent spring a little more earth is placed on the mound, and pressed around the trunk, as before. Some fruit growers recommend an examination of the trees each year in April and September, and with a knife destroy all borers that may be found, until the trees are four years old, and then mound thereafter. Where orchards are already suffering from them, the dirt should be removed from the roots, and a copious application of hot water, nigh unto boiling, made to the tree. This may be applied at any season, and will be

effectual in killing the larvæ or any eggs that may be present. Hot water will not injure the tree. (An application of soap does not prevent the moth from depositing her eggs, as in the case of apple-tree borers.—*Riley*.)

THE PLUM CURCULIO.

(*Conotrachelus nenuphar*.)

Description by Cyrus Thomas, State Entomologist of Illinois.



[FIGURE 3.]

In this cut, *a* represents the worm; *b*, the pupa; *c*, the perfect beetle; *d*, a plum showing the puncture made in depositing the egg, and the crescent cut. The hair-lines just below *a* and *c*, and to the left side of *b*, indicate the natural size.

This insect is undoubtedly one of the most destructive and difficult insects which the orchardist has to contend with. It yet remains master of the situation, although every part of its history, from the egg to the beetle, has been carefully studied, and horticulturists have tried every mode of defense and attack which ingenuity has so far been able to devise. The beetle, *c*, in Fig. 3, is of a dark-brown color, variegated with spots of white, ochre-yellow and black. The wing-cases have two shining black "humps" or tubercles on them—one on each case, about the middle; behind these is a broad band of dull yellow and white. It varies in length from a little over one-eighth to one-fifth of an inch. When disturbed, it has a habit of drawing up its legs and bending its snout under its breast, when it is easily mistaken for a knot or wart on a limb, or a fragment of bark.

The beetles usually come forth from their winter quarters in May and June. The female, when about to deposit her eggs, makes a minute cut with the jaws at the tip of her snout, and then, thrusting her snout into the cut, enlarges it sufficiently for the reception of an egg; turning around, she drops an egg into the opening, which she afterwards thrusts to the bottom of the cut with her snout. Then she cuts the crescent mark around one side of the orifice, as seen at *d* in the figure. One egg only is deposited in an opening, and is of a pearly-white color. Each female is supposed to have a stock of from fifty to one hundred eggs, and to deposit from five to ten a day. While those which appear earliest begin this work about the middle of May, it is continued by others which appear later, until the last of June or the first of July, thus extending the period of egg-depositing to about two months.

The larva (*a* in the figure) which is hatched from the egg, is a little footless worm, somewhat maggot-like, and is of a glassy, yellowish-white color, but partakes more or less of the color of the flesh of the fruit in which it resides. When full grown, it is about two-fifths of an inch long. The fruit containing this grub does not usually mature, but falls to the ground before it is fully ripe, and before the grub is quite full grown. When it has completed this stage, it leaves the fruit, now on the ground, and burrows a few inches into the earth, where it passes into the pupa state. This requires about three weeks, when it comes forth in the beetle form (*c*, in figure). As is well known, it attacks plums, nectarines, apricots, cherries, peaches, apples, pears, and quinces; but it does not so readily mature in the apple, as this fruit appears to be too juicy for it. Usually the fruit in which it resides drops to the ground before maturity, but the cherry appears to be an exception to this rule.

REMEDIES.

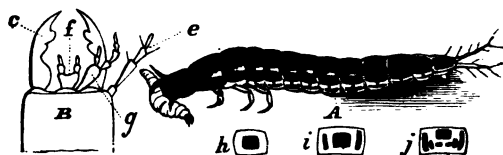
When alarmed, the beetle folds up its legs close to its body, bends its snout under its breast, and drops to the ground. This habit has suggested jarring the trees, and thus causing them to fall into a sheet or other contrivance for securing and destroying them, which is the most efficient remedy against them so far known. A number of orchardists, under the mistaken idea that the beetle had necessarily to climb the trees, have applied bandages as traps. (This is useless, as the beetle readily flies from tree to tree. Smudging the fruit with coal-tar smoke, to be repeated immediately after every rain, is claimed to be an effectual protection. This is easily and rapidly done. Take a pan of live coals, and put on them a quantity of coal tar. This will produce a dense smoke, which is easily scattered through the tree.—SEC'Y.)

THE SUB-ANGULAR GROUND BEETLE.
(*Aspidi glossa subangulata*.)



[FIGURE 4.]

This small, polished black beetle, represented enlarged at Fig. 4, the hair-line at the right side showing the natural size, in all probability serves us a good turn in helping to diminish the numbers of the curculio, for Mr. Walsh found him in a peach that had contained curculio grubs; and as the great family of beetles (*Carabus*) to which he belongs are all cannibals so far as known, and as he was therefore evidently not inside the peach for the fruit itself, he is strongly suspected of being a curculio-hunter.



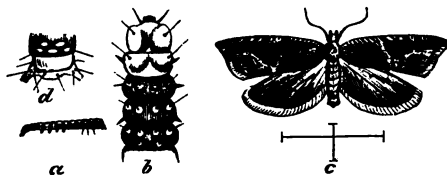
[FIGURE 5.]

Fig. 5 represents the larva of some ground beetle and cannibal. It is of a shining brown-black color above, and dull-whitish beneath. All these ground beetles are our friends, however, and should always be cherished and not crushed, as they are very apt to be from their habit of crawling and living on the ground.

(The larva represented at Fig. 5 is quite common in Kansas, and is very often found devouring the white-grub larva of the common May beetle, which is so injurious to strawberry beds. I have also noticed them devouring cut-worms, which annoy our gardens.—SEC'Y.)

THE STRAWBERRY-LEAF ROLLER.

(*Anchylopera fragariae*.)



[FIGURE 6.]

In this cut, *a* represents the worm; *b*, its head and first segments magnified; *c*, the moth.

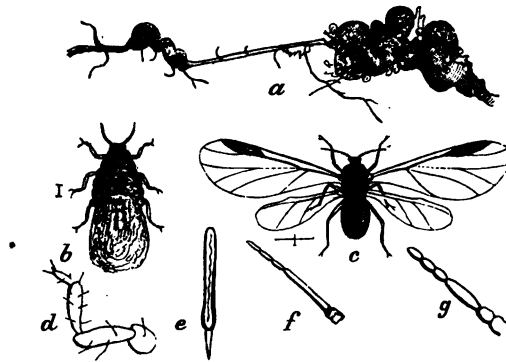
The above, Fig. 6, represents an insect which devours the leaves of our strawberries. The hair-lines just beneath the winged form, *c*, indicate the natural size. The larva (*a*, in figure above) is a very narrow, slender, light-greenish worm, or rather a pale, dull, olive color, from one-third to nearly one-half of an inch in length, the head reddish brown. It crumples and folds the leaves, feeding on their pulpy substance, and causing them to appear dry and seared, and most usually lines the inside of the fold with silk. There are two broods of this leaf roller during the year, and the worms of the first brood, which appear during the month of June, change to the pupa state within the rolled-up leaf, and become minute reddish-brown moths during the fore part of July. After pairing, the females deposit their eggs on the plants, from which eggs, in due time, hatch a second brood of worms. These last come to their maturity toward the end of September, and, changing to pupæ, pass the winter in that state.

REMEDIES.

The only modes of fighting this very destructive foe of the strawberry are first, to plow up, either in the spring or in the fall, such patches as are badly infested by it, by which means the pupæ will probably be buried and destroyed; and second, not to procure plants from an infested region, so as to

run the risk of introducing the plague upon your farm; (third, hand-picking, or rather hand-killing, can be made effectual if persevered in and carefully done. This method requires some little experience, as the worm is very quick-motioned, and will slide out of the folded leaf which it inhabits at the first disturbance, and generally escape at the base end of the leaf to the ground, and secrete itself among the mulching or in the litter of decayed leaves. If the whole leaf is quickly grasped by the hand, the worm is easily crushed. All such leaves should be removed from the plant and burned; for while the worm can be thus killed, there may remain a chrysalis, which may escape the pressure. It is useless to attempt to unfold the leaf for the purpose of killing the worm.—SEC'Y.)

THE APPLE-ROOT PLANT LOUSE.

(Eriosoma pyra.)

[FIGURE 7.]

Fig. 7 at the head of this article fully illustrates the Apple-root Plant Louse, highly magnified; *a* is a portion of a root as it appears after being attacked by this louse—the knotty or warty excrescences being caused by the punctures of the insect in search of the plant juices for food; *b* illustrates the larva, and *c* the winged state; while *d* represents the leg, *e* the beak or proboscis, *f* the antenna of the winged individual, and *g* that of the larva—all highly magnified. The hair-lines just below the left wing of the perfect insect (*c*), indicate the natural size of the perfect insect, with expanded wings. The young louse is of a deep flesh or pink color, and the proboscis extends the whole length of the body, while the older specimens have a deeper, purplish hue.

Many confound this insect with the Woolly Aphis, or louse found upon the under side of limbs on the tree. This one confines itself to the roots, with rarely an exceptional case, while the woolly louse equally adheres to the portions of the tree above ground. A few of the root species may occasionally be found on the suckers that spring up around the butt of the trunk, and even on the trunk and limbs, especially in places where a branch has

been formerly amputated, and nature is closing up the old wound by a circle of new bark; but such cases are rare. Wherever this insect works, small as it is, it may be easily recognized by the peculiar bluish-white cottony matter which it secretes from its body.

NATURAL REMEDIES.

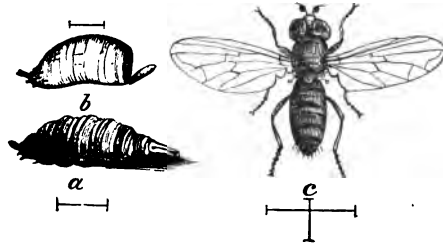
From the enormous rate at which all plant-lice multiply, it is plain that, if there were no checks upon the increase of the Apple-root Plant Louse, it would, in a few years, sweep away whole orchards, especially in southern latitudes. Luckily for the fruit growers and the fruit lovers, there exist two, at all events, and probably three such checks. The first is a very minute parasite fly, which infests the larva state of the insect. The second, the Root-Louse Syrphus Fly (fully illustrated on following page, at Fig. 8), is one of our most valuable aids in the reduction of this troublesome enemy. Like the larvæ of many other parasites, it is voracious in appetite, and makes rapid work in devouring the minute root lice. The appearance of this, as well as of all other parasites, should be thoroughly studied, that a ready discrimination can be made between friend and foe. The third insect which preys upon these root plant lice, at least in Missouri, is a small species of Ladybird.

ARTIFICIAL REMEDIES.

Mulching placed around trees infested with this root-louse is found to have the effect of bringing the lice to the surface of the ground, where they can be easily reached and destroyed by abundantly drenching the ground with hot water. (Another means used, is dressing the ground around such infested trees with wood ashes, which leach with the rains, saturate to quite a depth, and prove fatal to all the lice they reach. Young trees obtained from nurseries sometimes contain these lice upon their roots—resembling white mould—and can be cleaned of them by dipping the roots in a weak lye; they will then be safe for planting, and will generally produce as vigorous, healthy trees as others.

To nurserymen let the injunction be given, and doubly emphasized, that, for their own reputations' sake as honorable, intelligent and "square" men, having the highest regard for the horticultural interest of our State and an honest desire for the success of those engaged in rearing orchards, they should never allow trees infested with this louse to go from their grounds—not even for thrice the price of clean ones—thereby scattering the seed that shall cause an incalculable injury and losses of the most serious character; and the nurseryman who is not well informed with reference to the insects and their habits, which infest the trees and plants which he propagates and offers for sale in the market, is disqualified for the pursuit, has mistaken his calling, and there exists no apology for him.—SEC'y.)

ROOT-LOUSE SYRPHUS FLY.

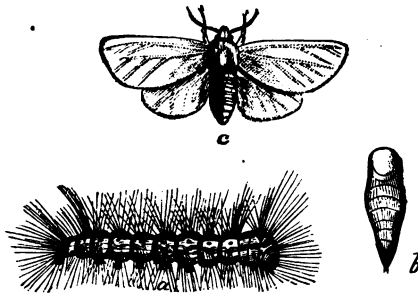
(Pipiza radicum.)

[FIGURE 8.]

In this cut, *a* represents the larva; *b*, the pupa; *c*, the perfect fly.

This friendly insect, which preys upon the Apple-root Plant Louse, represented at Fig. 7 of this report, is seen in the larva or worm form at *a*, Fig. 8—a footless maggot about half an inch long, and of a dirty-yellow color. It is generally found more or less covered with mud, and with the woolly matter secreted by the lice, and is not by any means easily discerned. It changes in the fall to the pupa state (*b*, Fig. 8), from which, in the following spring, there emerges the perfect fly (*c*, Fig. 8).

FALL WEB WORM.

(Hyphantria texior.)

[FIGURE 9.]

This insect is represented at Fig. 9: *a*, the full-grown worm; *b*, the chrysalis form; *c*, the moth. This insect has been taken for the *Tent Caterpillar*; but as it works in the latter part of the summer and during the fall, and the Tent Caterpillar works in spring and never in autumn, it cannot be the same. The descriptions are materially different.

The female deposits her eggs in a cluster on a leaf, generally near the end of a branch, which hatch during the months of June, July and August. Each worm begins spinning the moment it is born, and by their united efforts they soon cover the leaf with a web, under which they feed in company, devouring only the pulpy portions of the leaf. As they increase in size they extend their web, but always remain and feed under it. When young the worms are a pale yellow, with the hairs quite sparse, and with two rows of black marks along the body, and a black head. When full grown, they gen-

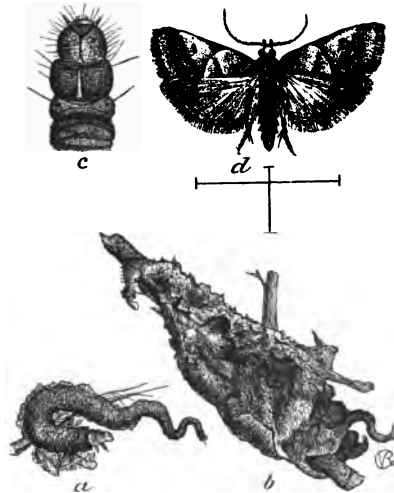
erally appear pale-yellowish or greenish, with a broad, dusky stripe along the back, and a yellowish stripe along the sides, and they are covered with whitish hairs, which spring from black and orange-yellow warts. The chrysalis (Fig. 9, *b*) is of a very dark-brown color, glabrous and polished, and faintly punctured, and is characterized by swelling or bulging about the middle.

The moth (Fig. 9, *c*) is white, with a very slight fulvous (dull yellow, with a mixture of gray and brown) shade; it has immaculate wings, but the front thighs are tawny-yellow and the feet blackish: in some the tawny thighs have a large black spot, while the shanks on the upper surface are rufous (brownish-red). In many, all the thighs are tawny-yellow, while in others they have scarcely any color. This insect passes the winter in the pupa state, under the ground, and the moth emerges during the month of May, or fore part of June. The worm is found on a great many kinds of trees, though on some more abundantly than others, but with the exception of the different grapevines, the evergreens, the sumachs and the ailanthus, scarcely any tree or shrub seems to come amiss to its voracious appetite.

REMEDIES.

As, therefore, nothing can be done to materially affect this insect during the winter, we must do all the fighting when the worms first hatch. Their web soon betrays them, and the twigs or branches containing them can be taken off, and the worms crushed by the foot; (or, if taking off the limb is objectionable, they are easily mashed with a gloved or otherwise-protected hand.—SEC'Y.)

THE RASCAL LEAF CRUMPLER. (*Phycia nebulo.*)



[FIGURE 10.]

Here, *a* represents a worm-case; *b*, case attached to a limb; *c*, head and first segments; *d*, perfect moth. All are magnified; the hair-lines just under the moth *d* represent the natural size.

This insect is represented magnified in the above Fig. 10. (It is what is

commonly known as the Leaf Roller; found very numerous in the orchards of central and southern Kansas.—SEC'Y.) It is one of those insects which is hardly noticed while carrying on its most destructive work; for it is most voracious during the leafy months of May and June, and is then more or less hidden by the foliage of the tree which it so effectually helps to denude. But the nakedness of winter, though it does not reveal the surreptitious worm, lays bare and renders conspicuous its little house, and those houses, (larval cases,) whether closely attached in clusters to the twigs, as at *b* in the figure, or hidden in a few seared and silk-sewed leaves, are unerring tokens of past injury to the trees, and symbols of increased injury in the future, unless removed. The bunches of leaves anchored to the tree by strong silken cables, and breasting defiantly every winter's wind, are, indeed, *significant insignia*, upon which is written in characters, if not in words, "Result of careless culture and unpardonable neglect."

This insect sometimes becomes so prodigiously multiplied in young orchards or in the nursery, as to seriously affect the health of the trees; for it does not confine itself to the leaves, but often in early spring commences on the swelling buds, attacks the young fruit, or gnaws the tender bark. There is but one brood a year, and the larva, about one-third grown, invariably passes the winter protected in its case. At this season of the year it is always of a deep reddish-brown. As the leaves expand in spring, it rouses from its winter lethargy, and after "heaving anchor"—to use a nautical expression—by severing the silken connections of its case, travels in search of food, and having found it, secures its case again and breaks its long fast. Toward the end of May it acquires its growth, when the earlier brown color frequently takes on a more or less decided deep hue. It is a smooth worm. The case at this time usually presents the appearance at *a*, Fig. 10, being crooked and twisted like a little horn, gradually enlarging, cornucopia-fashion from tip to mouth. It is formed of the worm's excrement and other debris, interwoven with silk, and is completely lined on the inside with a silken carpet. The worm leaves it for feeding purposes mostly during the night. The chrysalis is formed inside this case, and the moths commence to make their appearance during the fore part of June, and later as we go further north.

The moth *d*, in the figure, has front wings of a pale ash-gray color, variegated with cinnamon brown and dark brown, while the hind wings are of a uniform dusky gray. The male is distinguished from the female by a little horn-like tuft on the basal joint of the antennæ, which is a characteristic of the genus. The worms hatching from the eggs deposited by these moths are about one-third grown when winter sets in, and they pass this season as already described, and thus the insect continues from year to year the cycle of its life.

REMEDIES.

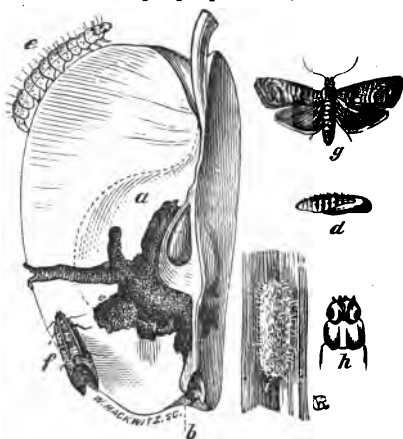
The Rascal Leaf Crumpler is one of those insects which from their peculiar habits are easily subdued. The orchardist has but to bear in mind that

it is single-brooded, and that it passes the winter in its case, and he will understand that by collecting and destroying these cases in the dead of the year when the tree is bare, he effectually puts a stop to its increase. If this fact was more generally recognized, we should see fewer of these in our orchards and nurseries. Whether collected in the winter or pulled off the trees in spring and summer, these cases should always be thrown into some small vessel and deposited in the center of a meadow, away from any fruit trees. Here the worms will wander about for a few yards and soon die from exhaustion and want of food, while any parasites with which they may be infested will mature and fly off. In this manner, as did Spartacus of old, we swell the ranks of our friends while defeating our foes. When so simple a remedy is at hand, it is hardly necessary to seek for others. All the cases should be removed, as even empty ones afford a snug retreat for some other insects. The female Canker Worm particularly is fond of depositing her eggs within such cases, as I have frequently found them crowded with such eggs.

(NOTE.—There are several known parasites which infest this Leaf Crumpler, which will be treated of in another year's report.—SEC'Y.)

THE CODLING MOTH, OR APPLE WORM.

(*Carpocapsa pomonella*.)



[FIGURE 11.]

Fig. 11 represents it in all its states, and gives at a glance its natural history: *a* represents a section of an apple which has been attacked by this worm, showing the burrowings, and channel of exit to the left; *b*, the point at which the egg was laid, and at which the young worm entered; *e*, the full-grown worm; *h*, its head, and first segment magnified; *i*, the cocoon which it spins; *d*, the chrysalis to which it changes; *f*, the moth which escapes from the chrysalis, as it appears when at rest; *g*, the moth with wings expanded. (The moth appears in Kansas generally during the month of April.—SEC'Y.) The first worms begin to leave the apple from the 5th to the 10th of June, and become moths again by the fore part of July. While some of the first

worms are leaving the apples, others are but just hatched from later-deposited eggs, and thus the two broods run into each other; but the second brood of worms (the progeny of the moths which hatch out after the first of July) invariably passes the winter in the worm or larva state, either within the apple after it is plucked, or within the cocoon. I have had them spin up as early as the latter part of August, and at different dates subsequently till the middle of November, and in every instance, whether they spun up early or late in the year, they remained in the larva state till the middle of April, when they all changed to chrysalids within a few days of each other. Though the codling moth prefers the apple to the pear, it nevertheless breeds freely in the pear. It also inhabits the fruit of the crab apple and quince, and has been reported as breeding in the sweetish pulp of a species of screw bean which grows in pods; also in plums and peaches. As a general rule, there is but a single worm in each apple, but two are sometimes found in one and the same fruit. The eggs require from four to ten days to hatch. The worm exists in larval state twenty-five to thirty days, and in the pupa state twelve to eighteen days.

REMEDIES.

Though with some varieties of the apple the fruit remains on the tree till after the worm has left it, yet by far the greater portion of the infested fruit falls prematurely with the worm to the ground; hence much can be done toward diminishing the numbers of this little pest, by picking up and destroying the fallen fruit as soon as it touches the ground. For this purpose hogs will be found quite valuable, when circumstances allow of their being turned into the orchard.

There is another remedy, which is always practicable, and more infallible than the use of hogs. It is that of entrapping the worms, which may be done by either of the following modes:

1. *Paper bandages.*—Common straw wrapping paper, 18x30, can be bought for sixty cents per bundle. Each bundle contains 240 sheets, and each sheet folded lengthwise thrice upon itself will give us eight layers between two and three inches wide, and of sufficient length to encircle most ordinary trees. It is easily drawn around the tree and fastened with a tack, and so cheap, that when the time comes to destroy the worms (every ten and not longer than fourteen days), the bandages containing them may be detached, piled in a heap and burned, and new ones attached in their places. If eight bandages are used to each tree during the season, the cost will be just two cents per tree; and the owner could well afford to treble this number of sheets, and keep them on each tree, either together or in different places.

2. *Rags.*—These placed as recommended for paper, or hung in the forks of the tree, have very much the same effect, but are more costly and difficult to get of requisite length. Where they can be had cheaply, they may be detached from the tree and scalded with their contents, and then replaced.

3. *Hay bands*.—These, on account of their greater inconvenience, I place last.

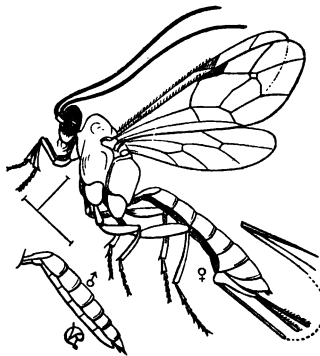
All these methods are good, and the orchardist will be guided in his choice by individual circumstances. The philosophy of the band method is simply that the worms in quitting the fruit, whether it is on the tree or on the ground, in their search for a cozy nook in which to spin up, find the shelter afforded by the bands just the thing, and in ninety-nine cases in a hundred they will accept the lure, if no more enticing one be in their way.

To make this system perfectly effectual, I lay down the following as rules: 1st, The band should be placed around the tree by the first of June; 2d, It should be examined every week, or at the very latest, every two weeks, and the worms killed; 3d, The trunk of the tree should be kept free from old, rough bark, so as to give the worms no other place of shelter; 4th, The ground itself should be kept free from weeds and rubbish.

But many of the worms of the second brood yet remain in the apples, even after they are gathered for the market, and these wormy apples are barreled or put in bins with the sound ones and stored. From them the worms will continue to issue, and they generally find plenty of convenient corners about the barrels, and particularly the hoops, in which to form their cocoons. Hundreds of these cocoons may sometimes be found around a single barrel, and these would be sufficient to abundantly continue the species for another year; and when we consider that every female moth which escapes in the spring lays from two to three hundred eggs, and thus spoils as many apples, the practical importance of thoroughly examining, in early spring, all barrels or vessels in which apples have been stored, becomes at once apparent. It should therefore be made a rule to destroy all cocoons found on such barrels or vessels, either by burning them up or by immersing them in scalding-hot water.

THE RING-LEGGED PIMPLA—APPLE-WORM PARASITE.

(*Pimpla annulipes*.)



[FIGURE 12.]

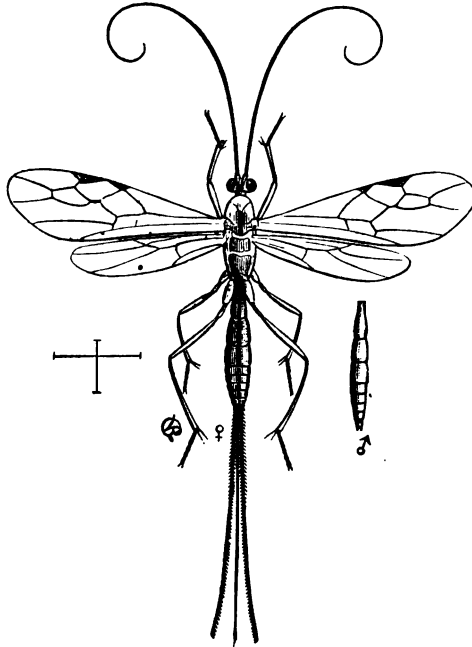
This insect (enemy of the Codling Moth, or Apple Worm) is represented

in outline at Fig. 12. (The hair-lines at the left indicate the natural length, and one-half the expanded breadth.) It is a black fly, varying considerably in size — the female sometimes measuring one-quarter, the others one-half inch, exclusive of ovipositor; the male somewhat smaller. The male has a more slender abdomen, which is unarmed. This fly eats its way through the chrysalis and cocoon of the Codling Moth, without having previously made any cocoon of its own.

THE DELICATE LONG-STING.

(*Microgasterus delicatus*.)

Second parasite of the Codling Moth or Apple Worm.



[FIGURE 13.]

This insect is represented at Fig. 13 in greatly-enlarged size—the crossed hair-lines to the left indicating natural size. It is a graceful fly, with very long antennæ and legs, and the female with a long ovipositor. The color is pale honey-yellow, inclining to brown above. The unfortunate Apple Worm is probably pierced while yet in the fruit, as it always succumbs soon after forming its cocoon and before changing to chrysalis; while in the case of the *Pimpla*, (the first parasite mentioned,) it is attacked either while leaving the fruit or after having spun its cocoon. The larva of the Delicate Long-Sting forms, for itself, within the cocoon of its victim, a sufficiently tough, thin, oblong-oval, shiny brown cocoon, from which the perfect fly issues by cutting open a lid at one end. As both of these parasites transform within the apple-worm cocoon, it is next to impossible and quite impracticable to separate friend from foe in removing and destroying the contents of the bandages.

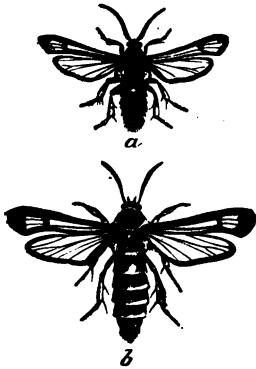
(Recommended as remedies in treating of the Apple Worm in another part of this report.)

Besides these parasites, I have found that ants, cockroaches and the larvæ of certain predaceous beetles play by no means an important in destroying the Apple Worm.

THE RASPBERRY-ROOT BORER.

(*Egeria rubi*.)

The common borer which works in the canes of raspberries and blackberries, and is frequently mentioned in entomological works, is a footless grub, the



[FIGURE 14.]

larva of a beetle, the female of which, according to Harris, lays her eggs singly on the stem, near a leaf or small twig; but according to Mr. W. Saunders, of London, Ont., girdles the tops of young growing canes in two places, one about an inch from the other, and then between these rings, thrusts a single egg into the cane through a puncture, also doubtless made by her jaw. But just as the currant, the grape, the maple and many other plants are affected with moth larvæ, as well as beetle larvæ, so the blackberry and raspberry have their lepidopterous borer, at once distinguished by its legs from the legless grub of the beetle above mentioned. Its life history is essentially the same as

that of the lepidopterous (meaning soft wings, like unto moths and butterflies) root borers of the peach and grape. The worm of this insect attains an inch or more in length, is of a pale-yellow color, with dark, reddish-brown head. It dwells mostly in the root, but its burrows often extend several inches above ground. The moth (Fig. 14; *a* the male, *b* the female) has the front wings heavily bordered with rusty brown, and the body prettily marked with yellow and black, and slightly tufted.

("The colors on the abdomen form in alternate rings."—*Thomas*.) The moths issue in August and September, and probably much earlier. I know of no remedy for its injury, other than its destruction wherever found. ("The only remedy which has been suggested, and, in fact, the only one needed if attended to properly and in time, is to cut out all infested canes in spring and burn them carefully before the beetle has emerged from them. If this is done it will prove as near a specific as any remedy which can be applied to insect pests."—*Thomas*.)

Major Muhleman thus communicates his experience with this borer:

"It was in 1870, from July to September, that I first captured the moth, sometimes resting on the leaves, and at other times leisurely flying about the blackberry bushes. At that time, I had not noticed the effects of its work, though I had heard and read about the 'winter-killing' of Lawton blackberries. In the spring following, viz., 1871, I found my bearing canes almost all dead, and during the summer of the same year, no-

ticed more moths. I then suspected it was that moth, or its worm, that caused the 'winter-kill.' In the spring of 1872, the last year's canes were again dead, and I determined to get at the truth of the matter, if possible. I mowed the canes all down, and then dug out the stools, cut them open lengthwise, and found the trace of the insect in every one. The result of my investigation was as follows: I found that the young worm, upon hatching, entered the growing cane at a place about four, five and six inches above the ground, and then worked downward, so that at the approach of winter it found itself in the roots, where it remained all winter; in the spring, the half-grown worm ascended through some other cane than the one in which it went down. At the height of about four inches above the ground I found several larvæ in different stages of growth, from five-eighths of an inch to a full inch in length, the anterior portion of the worm invariably upward. This was in the latter part of April. I found at the height of six inches larger holes, evidently those of exit, in old canes, with particles of the pupa shell in the orifice. I also believe that the insect is preyed upon by a parasite, as in some old canes I found some whole pupæ with the hole of a parasite."

Mr. Muhleman found that they were more injurious to his Lawtons than his Kittatinny's.

Mr. Theo. Engleman, Muscotah, Illinois, has also had some sad experience with this borer, and very naturally writes me that it is the same insect that infests the peach roots (which at a glance it very much resembles.—SEC'Y), for the reason that these raspberries were close to the site of an old peach orchard that had been ruined by borers. This inference was very erroneous, and raspberries might be surrounded with peach trees infested with borers without receiving any injury from the same, and *vice versa*, for the two borers are specifically distinct, and the one never feeds on the food-plants of the other. (The first indication of the presence of this borer is, that of the young growing canes wilting, which is generally attributed to the force of wind, weight of heavy growth of cane, or some accident by which the cane has been partially separated from the crown. I have found this insect working within such canes, and it was evidently the cause of the wilt and subsequent death of such canes.—SEC'Y.)

TREE CRICKET.

(*Ecanthus niveus*.)

The general color of this insect is a delicate greenish, semi-transparent white, though some specimens have a blackish shade. The female deposits her eggs in grape, raspberry and blackberry canes, in the twigs of the peach, white willow and a variety of other trees.* In depositing her eggs she makes a straight, longitudinal, contiguous row of punctures, each puncture about the size of that which would be made by an ordinary pin. From each of these holes, a narrow, yellowish, elongate egg runs slantingly across the pith. The canes thus punctured almost invariably die above the punctured part, and the injury thus caused to vines is sometimes considerable.

This cricket is aided in its destructive work by another species, which has the same habit, viz., the Jumping Cricket. This last is more robustly built

* Are found very plentiful in the twigs of apple and pear trees.—SECRETARY.

than the former, and is at once distinguished by its uniform light-brown color; and I have good reason to believe that it deposits its eggs in the grapevine in a row of punctures, each of which is about one-third of an inch apart, and each of which leads to from ten to twelve narrow eggs, about one-tenth of an inch long, and deposited on either side of the puncture, lengthwise in the pith.

REMEDIES.

The crickets themselves should be captured and crushed whenever met with, while the vineyardist should make a business of searching in winter time for all punctured twigs, and, by burning them, prevent their increase in future.

THE TARNISH PLANT BUG.

(*Capsus oblineatus*.)

This figure, No. 15, represents this bug in a greatly-enlarged form, the hair-line at the left indicating its natural size. This bug is a very variable species, the males being generally much darker than the females. The more common color of this bug is of a dull yellow, approaching to a light russet or brown, and frequently inclines to an olive-green, variegated, as in the figure above, with black and dark brown, and one of the most characteristic marks is a yellow V, sometimes looking more like a Y, or indicated by three simple dots on the scutel, (the little triangular piece on the middle of the back behind the thorax.) The thorax, which is finely punctured, is finely bordered and divided down the middle with yellow, and each of the



[FIGURE 15.]

divisions contains two broader longitudinal yellow lines, very frequently obsolete behind. The thighs always have two dark bands or rings near their tips. This plant bug is a very general feeder, attacking very many kinds of herbaceous plants, such as dahlias, asters, marigolds, balsams, cabbages, potatoes, turnips, etc. Its puncture seems to have a peculiarly poisonous effect, on which account, and from its great numbers, it often proves a really formidable foe. It is especially hard on young pear and quince trees, causing the tender leaves and the young shoots and twigs to turn black, as though they had been burned by fire. On old trees it is not so common, though it frequently congregates on such as are in bearing, and causes the young fruit to wither and drop.

As soon as vegetation starts in the spring, the mature bugs, which winter over in all manner of sheltered places, may be seen collecting on the various plants which have been mentioned. Early in the morning they may be found buried between the expanding leaves, and at this time they are sluggish, and may be shaken down and destroyed; but as soon as the sun gets warmer they become more active, and, when approached, dodge from one

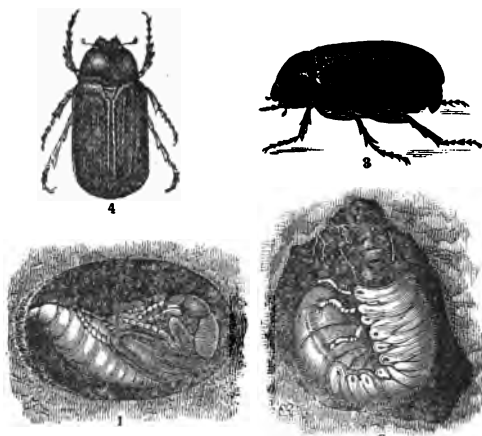
side of the plant to the other, or else take wing and fly away. They deposit their eggs and breed on the plants, and the young and old bugs together may be noticed through most of the summer months. The young bugs are perfectly green, but in other respects do not differ from their parents except in lacking wings. They hide between the flower-petals, stems and leaves of different plants, and are not easily detected. Late in the fall, none but full-grown and winged bugs are to be met with, but whether one or two generations are produced during the season has not been fully ascertained, although in all probability there are two.

REMEDIES.

In the great majority of cases we are enabled to counteract the injurious work of noxious insects the moment we thoroughly comprehend their habits and peculiarities, but there are a few which almost defy our efforts. The tarnish plant bug belongs to this class, for we are almost powerless before it, from the fact that it breeds and abounds on such a great variety of plants and weeds, and that it flies so readily from one to the other. Its flight, however, is limited, and there can be no better protective treatment than clean culture; for the principal damage is occasioned by the old bugs when they leave their winter quarters and congregate on the tender buds and leaves of young fruit stock; and the fewer weeds there are to nourish them during the summer and protect them during the winter, the fewer bugs there will be. The small birds must also be protected.

Applications of air-slaked lime and sulphur have been recommended to keep them off; but any application of this kind used, to be effectual, I incline to think should be of a fluid nature; and strong tobacco-water, quassia-water, vinegar and cresylic soap I should recommend. Some persons who have used the latter compound have complained that it injures the plants. Every one using it should bear in mind that the pure acid, no matter how much diluted with water, will separate when sprinkled, and burn holes in and discolor plant texture; while if properly used as a saponaceous (soapy) wash it will have no injurious effect. It must likewise be borne in mind that the so-called "plant protector," which is a soap made of this same (cresylic) acid, will bear very much diluting (say one part of the soap to fifty or even one hundred parts of water), and that it will injure tender-leaved plants if used too strong. I have noticed that the bugs are extremely fond of congregating upon the bright yellow flowers of the cabbage, which, as every one knows, blooms very early in the season; and it would be advisable for persons who have been seriously troubled with this bug, and who live in a sufficiently southern latitude, where the plant will not winter-kill, to let a patch of cabbages run wild and go to seed in some remote corner of the farm, in order that the bugs may be attracted thither and more readily destroyed than when scattered over a larger area.

WHITE GRUB.
(*Lachnosterna quercina*.)
The larva of the May beetle.



[FIGURE 16.]

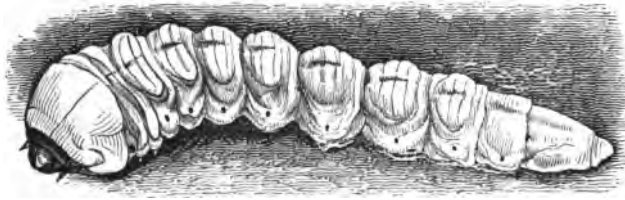
In this cut, 1 represents the pupa; 2, the larva; 3, side view of beetle; 4, back view of beetle.

This insect is represented at Fig. 16 in natural size. The beetles appear in vast swarms during the evenings in the month of May, earlier or later, according to the season or latitude. The beetle is quite voracious, and often greatly injures both fruit and ornamental trees. Their existence in the beetle state is, however, short, and as they are confined to the foliage, their injuries are exceedingly small compared with those which their larvæ inflict upon us. Our meadows, strawberry beds, corn, vegetables, and even young nursery stock, are all subject to the attacks of these white grubs, and often ruined by them. Soon after pairing, the female beetle creeps into the earth, especially wherever the soil is loose and rough, and after depositing her eggs, to the number of forty or fifty, dies. These hatch in the course of a month, and, the grubs growing slowly, do not attain full size until the early spring of the third year, when they construct an ovoid chamber, lined with a gelatinous fluid, change into pupæ, and soon afterward into beetles. These last are at first white, and all the parts soft as the pupa, and they frequently remain in the earth for weeks at a time, until thoroughly hardened, and then, on some favorable night in May, they rise in swarms and fill the air.

REMEDIES.

As natural checks and destroyers of this grub, may be mentioned the badger, weasel, skunk, martin, the crow, and the different hawks, but especially the *ground beetles* among insects. Hogs are fond of them, and a gang may be turned into an infested meadow, which is to be cultivated the next year, with good advantage. (As a light in the night time attracts the beetle, it is believed that heavy bonfires built around the skirts of the grounds infested, during the month of May, will allure them to destruction.—SEC'Y.)

THE NEW GRAPE-ROOT BORER.
(*Orthosoma cylindricum*.)



a, Larva.
[FIGURE 17.]

Figs. 17 and 18 represent this insect in larva *a*, *b*, supposed to be the beetle, or at least similar in many respects, both in natural size and color. The average length of the larva or worm, when full grown, is three inches; color, pale-yellowish white, translucent, with glaucous and bluish shadings, and a distinct dorsal line of the last color. The beetle is large, flattened, long-horned, and light bay-colored. (The larva of this insect is very destructive to the roots of young grapevines, yearling seedling apple trees, Osage orange plants, and others. They commence at a point near the surface of the ground, and follow the roots downward, eating as they go, frequently to a depth of ten or twelve inches. In seedling plats, they will follow the row, descending as above stated, and having devoured almost the entire root, will return to within an inch from the surface, and push on to the next plant in the



b, Beetle.
[FIGURE 18.]

row, and so continue until the approach of winter. The first knowledge obtained of its presence is in the tops of plants wilting, and then dying. They can easily be checked by following the dying plants. I have often found them midway between the dying and next living plant in the row. Here is a wonderful instinct in insect life, which enables the worm, while an inch under ground, to follow the course of the row of plants in search of food.—SEC'Y.)

THE HANDMAID MOTH.
(*Datana ministra*.)

Description by Cyrus Thomas, State Entomologist of Illinois.



[FIGURE 19.]

In the above, *a* represents the larva or worm; *b*, the moth; *c*, cluster of eggs; *d*, single egg, enlarged.

This defoliating insect is represented in natural size at Fig. 19. ("The larva, called the yellow-necked apple-tree caterpillar, is black, with four pale-yellow stripes upon the sides, narrower than the intervening spaces; upper side of the neck, or first segment, deep wax-yellow; hairs upon the body whitish, about as long as the width of the body."—*Extract from Dr. Le Baron.*) The wings of the moth expand nearly two inches. The fore wings are of a reddish or russet brown, crossed by four transverse lines of a darker brown, with traces of another between third and fourth, and a faint wavy line from the apex toward the middle of the fourth. Hind wings lighter and unmarked. Head, and a space extending round to the middle of the thorax above, darker reddish brown; the rest of the body similar to the main color of the wings.

REMEDIES.

("They are eminently gregarious, and therefore easily controlled. They feed side by side, as closely together as they can stand, and when they are young a whole brood of them can be taken from the tree by removing a single leaf."—*Extract from Dr. Le Baron.*)

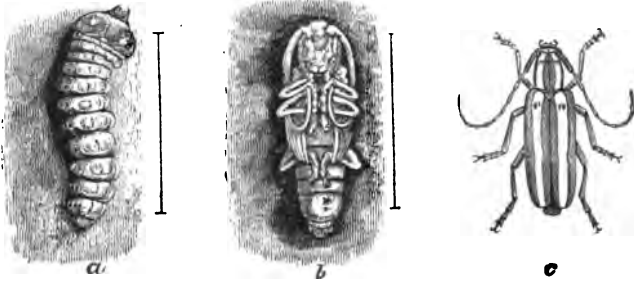
Later in the season they come down to the trunk and larger limbs of the tree to moult. At this time they are bound together by a web, and a whole colony can be taken off and destroyed.

(Their whereabouts is easily discovered by the leafless condition of the limbs where they have been feeding. Their appearance in Kansas is generally during the fore part of August.—SEC'Y.)

PARASITES.

(There is a large *Ichneumon Fly* that breeds in the caterpillar of the Handmaid Moth. It resembles at a distance the common mud wasp in form. It hovers around the caterpillar, and frequently alighting upon a leaf close to the worm, waits for a favorable opportunity in which to place its eggs upon the worm. This worm, conscious of the presence of an enemy, at its approach throws its head and fore part of its body rapidly to and fro as if in pain, until the fly either disappears or settles upon a leaf, and then it (the caterpillar) resumes its feeding. This is the favored moment for the parasitic fly, and very quickly it improves it by flying at once to the worm and depositing an egg upon its body, which causes it to begin writhing again, as if conscious of a death-stroke. The fly then passes off, satisfied with its effort, but generally to return again in a few moments to make another egg deposit upon some other one of the brood of Handmaid Moth larvæ, as there are generally quite a number on the same limb.—SEC'Y.)

THE ROUND-HEADED APPLE-TREE BORER.
(*Saperda bivittata*.)



[FIGURE 20.]

At Fig. 20 this borer is represented in its three stages—*a*, the larva; *b*, pupa; *c*, perfect beetle. The beetle may be known by the popular name of the Two-striped Saperda, while its larva is best known by the name of the Round-headed Apple-tree Borer, in contradistinction to the flat-headed species. The average length of the larva, when full grown, is about one inch. Its color is light yellow, with a tawny-yellow spot of a more horny consistency on the first segment, which, under a lens, is found to be formed of a mass of light spots. The head is a chestnut brown, polished and horny, and the jaws are deep black. The Two-striped Saperda makes its appearance in the beetle state during the months of May and June, and is seldom seen by any but the entomologist who makes a point of hunting for it, from the fact that it remains quietly hidden by day and flies and moves only by night. The female deposits the bulk of her eggs during the month of June, mostly at the foot of the tree.* The young worms hatch and commence boring into the bark within a fortnight afterward. These young worms differ in no essential from the full-grown specimens, except in their minute size; and they invariably live, for the first year of their existence, on the sapwood and inner bark, excavating shallow, flat cavities, which are found stuffed full of their sawdust-like castings. The hole by which the newly-hatched worm penetrated is so very minute that it fills up, though not until a few grains of castings have fallen from it; but the presence of the worms may be generally detected, especially in young trees, from the bark under which they lie becoming darkened, and sufficiently dry and dead to contract and form cracks. Through these cracks some of the castings of the worm generally protrude and fall to the ground in a little heap; and this occurs more frequently in the spring of the year, when, with the rising sap and frequent rains, such castings become swollen and augment in bulk.

As winter approaches, the young borer descends as near the ground as its burrow will allow, and doubtless remains inactive till the following spring.

*SINCE the above was first published, some facts have been discovered with reference to the oviposition of this *saperda*, which materially modify these statements. These will be given in a subsequent Report, containing a cut illustrating the placing of the eggs.—SEC'Y.

On approach of the second winter, it is about half grown, and still living on the sap wood; and it is at this time that these borers do the most damage, for where there are four or five in a single tree, they almost completely girdle it. In the course of the next summer, when it has become three-fourths grown, it generally commences to cut a cylindrical passage upward into the solid wood; and before having finished its larval growth, it invariably extends this passage right to the bark, sometimes cutting entirely through a tree to the opposite side from which it began, sometimes turning back at different angles. It then stuffs the upper end of the passage with sawdust-like powder, and the lower part with curly fibers of wood, after which it rests from its labors. It thus finishes its gnawing work during the commencement of the third winter, but remains motionless in the larval state till the following spring, when it casts its skin once more, and becomes a pupa. After resting three weeks in the pupa state, it becomes a beetle, with all its members and parts at first soft and weak. These gradually harden, and in a fortnight more it cuts its way through its sawdust-like castings in the upper passage, and issues from the tree through a perfectly smooth hole. Thus it is in the tree a few days less than three years. It infests apple, quince, mountain ash, hawthorn and pear trees, and Juneberry bushes.

REMEDIES.

This insect has some natural enemies belonging to its own great class, and some of our woodpeckers seek it out from its retreat and devour it; but its enemies are certainly not sufficiently under our control, and to grow healthy apple trees we must fight it artificially. Here again prevention will be found better than a cure, and a stitch in time will not only save nine, but fully ninety-nine. Experiments have amply proved that alkaline washes are repulsive to this insect, and the female beetle will not lay her eggs on trees protected by such washes. Keep the base of every tree in the orchard free from weeds and trash, and apply soap to them during the month of May, and repeat subsequently as often as washed off, and they will not likely be troubled with borers. Soft or common bar soap can be used. The former is perhaps the most convenient, and the newer and softer it is the better. This borer confines itself almost entirely to the butt of the tree, though very rarely it is found in the fork. It is, therefore, only necessary, in soaping, to rub over the lower part of the trunk and the fork, but it is a good plan to lay a piece of the soap in the principal fork, so that it may be washed down by the rains. But even where the preventive has been used, it is always advisable to examine the trees in the fall, at which time the young worms that hatched through the summer may be generally detected and easily cut out, without injury to the tree.

[Extract from Harris's "Insects Injurious to Vegetation," p. 109.]

"Notwithstanding the pains that have been taken by some persons to destroy and exterminate these pernicious borers, they continue to reappear in our orchards and nurseries every year. The reasons of this are to be found in the habits of the insects, and

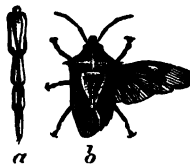
in individual carelessness. Many orchards suffer deplorably from the want of proper attention; the trees are permitted to remain, year after year, without any pains being taken to destroy the numerous and various insects that infest them; old orchards, especially, are neglected, and not only the rugged trunks of the trees, but even a forest of unpruned suckers around them, are left to the undisturbed possession and inheritance of the saperda. . . . On the means that have been used to destroy this borer, a few remarks only need to be made—for it is evident that they can be fully successful only when adopted. Killing it by a wire thrust into the holes it has made, is one of the oldest, safest and most successful methods. Cutting out the grub with a knife or gouge is the most common practice, but it is feared that these tools have sometimes been used without sufficient caution."

BENEFICIAL INSECTS.

The following—Figs. 21 to 32, inclusive—are all friendly to the pursuit of horticulture, and should all receive the protective care of man.

SPINED SOLDIER BUG.

(*Arma spinosa*.)



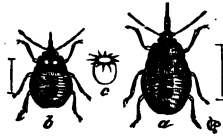
[FIGURE 21.]

In the above cut, *a* shows the beak, magnified; *b*, the perfect bug.

This friendly insect is represented at Fig. 21, its left wing being closed while the right one is expanded. Its color is a dull olive, with yellow markings, while the commonly known *Squash Bug* hereafter referred to, and is probably taken for it by many, is a sober-brown color, and speckled with ochre and yellow, and of a much more slender form. It may be at once distinguished from other bugs of a similar appearance, by the opaque brown streak at the transparent and glassy tip of its wing-cases.

This insect is one of our best friends, and is often mercilessly slaughtered for the unfriendly squash bug, which to the uneducated it very much resembles. We can well endure his unpleasant odor when we reflect on his kind services. Just think of it, you bitter bug-haters! this little soldier has, beyond a doubt, saved thousands of dollars to States by heroically stabbing and slaying countless hosts of one of your worst enemies, the Colorado Potato Bug. It persistently pursues and captures the caterpillar of the Hand-maid Moth (an enemy of the orchardist), and the larvæ of several species of cut-worms, and many other insects, some friendly, but annoying to the horticulturist. With its little beak, which, when not in use, lies close to the under side of its body, extending back between its legs, it pierces the worms and sucks out all the juices of the body and throws the empty skin away. I have seen two of these at work at one worm, and the tenacity with which they maintain their grip on the worm, even when disturbed, is remarkable.

SOLDIER BUG.



[FIGURE 22.]

In this cut, *a* shows the pupa; *b*, full-grown larva; *c*, egg—all magnified.

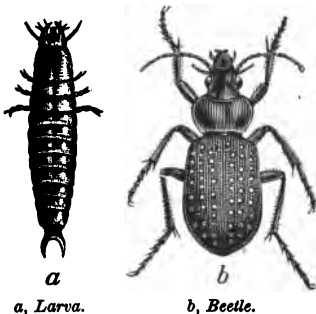
This insect is represented at Fig. 22. The hair-lines to the right of *a* and to the left of *b* in the figure 22 indicate the natural size. The eggs of this Soldier Bug, as I have reason to believe, are pretty little bronze-colored, caldron-shaped objects, with a convex lid, around which ciliate fifteen or sixteen white spines (Fig. 22, *c*). They are neatly placed side by side, in clusters of a dozen or more, to leaves and other objects, and are so much subject to parasitic attacks, that those who undertake to hatch such as are found out of doors will more often get flies than bugs. The newly-hatched bug is ovoid and shiny black, with some bright crimson about the abdomen. In the full-grown larva (Fig. 22, *b*) the black still predominates on the thorax, but some four yellowish spots appear, and the abdomen becomes more yellowish, though still tinted with red. In the pupa (Fig. 22, *a*), which is readily distinguished by the little wing-pads, the ochreous yellow extends still more, and finally, with the last moult, the black disappears entirely in the perfect insect. We have been taught to admire the muscular power of the lion, which is able to grip and toss an animal larger than itself with its powerful neck and jaws; but feats performed by these young Soldier Bugs throw the lion's strength completely in the shade, for they may often be seen running nimbly with the larva of a Colorado Potato Beetle four or five times their own size, held high in air upon their outstretched beak.

FIERY GROUND BEETLE.

(*Calosoma calidum*.)

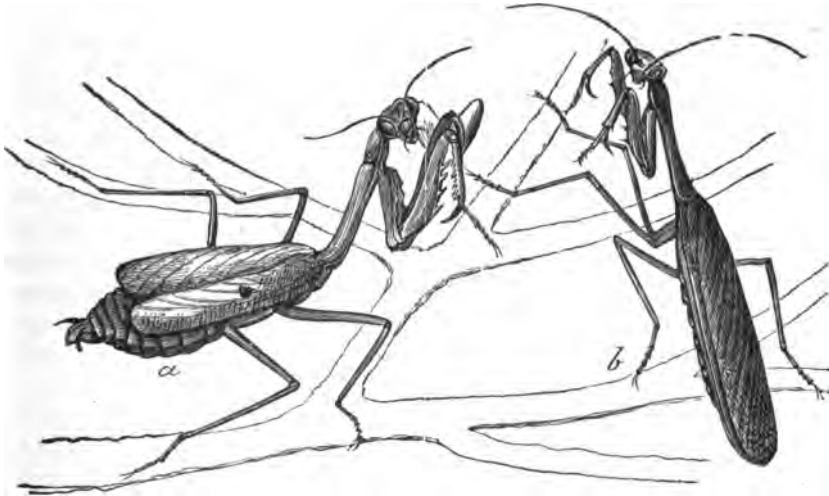
This larva has been very appropriately called the Cut-Worm Lion, by Dr. Shimer, of Mount Carroll, Illinois. The larva of this Cut-Worm Lion,

[FIGURE 23.]

*a*, Larva.*b*, Beetle.

a, Fig. 23, has quite a formidable appearance, and is exceedingly agile. It is flattened, of a black color, with six legs upon the breast, and a pair of sharp, hook-like jaws, projecting in front of its head. It pursues the worms in their retreats under ground, and seizes them wherever it comes in contact with them. Sometimes a Cut-Worm Lion will seize a worm twice the size of itself, and will cling with bull-dog tenacity to its prey, through all its throes, its writhings and twistings, till at last the worm succumbs, exhausted, and the victor bites two or three holes through its skin, and proceeds to suck out its juices.

REAR HORSE, *alias* CAMEL CRICKET, *alias* DEVIL'S RIDING HORSE, *alias* PRAYING MANTIS, (*Mantis Carolina*.)



[FIGURE 24.]

Fig. 24 represents both sexes—*a* the female, *b* the male. It will be seen they differ materially from each other. While the male can fly through the air with greater facility than do our grasshoppers, the female is utterly incapable of performing the same feat, and only uses her wings when in battle with one of her own kind, or when pouncing upon her prey, at which time she raises them very much as a swan raises his wings when irritated.



[FIGURE 25.]

The general color of this insect is a grayish-brown, though a pale green (dimorphous) form is quite common. About the beginning of August these Mantises acquire wings, and about the middle of September the female commences to deposit her eggs. These eggs are all tightly glued together in a peculiar mass, and are deposited in all sorts of situations, but principally on the twigs of trees. Figure 25 represents two of these egg masses, of natural size. These egg masses are often found by persons in the winter, though very few are able to conjecture what they really are. Some persons confound them with the eggs of the common tent caterpillar, which are represented at Figure 26. Between the 10th and 20th of June, these eggs hatch into comical-looking little mantises, in all respects resembling their parents, with the exception that the young have no wings. The eggs of this insect may be readily transported from one place to another, and the insect can be thus easily colonized. Figure 26 represents the eggs of



[FIG. 26.]

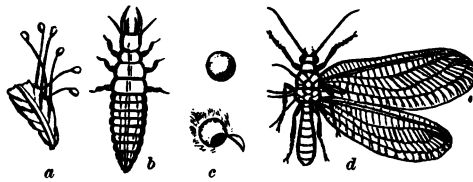
the insect can be thus easily colonized. Figure 26 represents the eggs of

the common tent caterpillar, as they appear attached to a section of a limb.

This peculiar and predatory insect is, very fortunately, common in Kansas, and needs only to be known to be husbanded. Its food consists mainly of flies, although it is most voracious in devouring living insects that come within its grasp, as various kinds of butterflies, grasshoppers, caterpillars, and the Colorado potato beetle. It disdains all dead food, and never makes chase for the living, but warily, patiently and motionless, it watches until its victim is within reach of its fore-arm, and then clutches it with a sudden and rapid motion. Its appearance is really formidable, and its attitude while watching for its prey quite menacing, and on this account it is held in general and superstitious dread. It is, however, utterly incapable of harming any one, and, as one of our best friends, should be cherished and protected.

THE LACEWING FLY.

(*Chrysopa*.)



[FIGURE 27.]

This insect is one of the horticulturist's most active aids, and a true friend to his interests. Fig. 27, *d*, represents the perfect or winged form, the wings on the left side being left off to save space. It is of a pale-green color, has four wings resembling delicate lace, and eyes of the brilliancy of polished gold, as its generical name, *Chrysopa perla*, implies; but notwithstanding its delicacy and beauty, it is extremely disgusting from the offensive odor it exhales. It suspends its eggs (see Fig. 27, *a*) by threads, in clusters, beneath the leaves where the plant lice abound. The young or larva (*b*, Fig. 27) is a rather long and slender grub, provided with a pair of large, curved and sharp teeth (jaws) moving laterally, and each perforated with a hole through which it sucks the juices of its victims. The havoc it makes is astonishing, for one minute is all the time it requires to kill the largest plant louse, and suck out the fluid contents of its body. Prof. Riley says:

"In its oviposition we see, as everywhere else in nature, an all-wise creative forethought, and a wonderful adaptation to a particular end, in the instinct which prompts and the power which enables the female lacewing to thus deposit her eggs; for the newly-hatched larvæ are so exceedingly voracious that they would devour the eggs which yet remained unhatched, if they could but reach them. The larvæ, when full grown, spin perfectly round white cocoons [see Fig. 27, *c*,] by means of a spinneret with which they are furnished at the extremity of the body, and they attach them with threads of loose silk to the under side of fences and in sheltered situations. These cocoons are of extraordinarily small size compared with the larva which spins them."

LADYBIRD.
(*Hippodamia maculata*.)



[FIGURE 28.]

This friendly insect is represented at Fig. 28, the hair-line to its right indicating its natural size. It is a quite common insect of a pink color, having ten black spots on its wing-cases. It feeds voraciously upon chinch-bugs, eggs of Colorado potato beetle, and of certain bark lice and plant lice found upon cucumber and other garden vines.

NINE-SPOTTED LADYBIRD.
(*Coccinella, 9-notata*.)



[FIGURE 29.]

This friendly insect is represented at Fig. 29. The hair-line at its right side indicates its natural size. It is of a brick-red color, and marked with nine small black spots. This insect has the same habits as its relative just described.

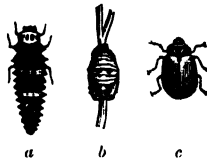
THIRTEEN-SPOTTED LADYBIRD.
(*Hippodamia, 13-punctata*.)



[FIGURE 30.]

This insect is represented at Fig. 30. The hair-line to its left indicates its natural size. It is also of a brick-red color, but marked with thirteen black spots. The habits of this one are similar to those first described.

THE CONVERGENT LADYBIRD.
(*Hippodamia convergens*.)



[FIGURE 31.]

In the above cut, *a* shows the larva; *b*, the pupa; *c*, the beetle—all natural size.

This insect is represented at Fig. 31; *a* indicates the larva in natural size, its color being blue, orange and black. When full grown it hangs by the tail to the under side of a stalk or leaf, and transforms into pupa, repre-

sented at *b*. In this state it is the exact color of the Colorado beetle larva, and is doubtless often mistaken for that larva and ruthlessly destroyed. It may readily be distinguished, however, by its quiescence; and let every potato grower learn well to recognize it, and spare its life. The beetle or winged state is represented at *c*. ("The larvæ of these ladybirds are small, flattened grubs of a bluish or blue-black color, spotted usually with red or yellow, and furnished with six legs near the fore part of the body. [See *a*, Fig. 31.] They are hatched from little yellow eggs laid in clusters on the under side of leaves."—*Harris*.)

The larvæ of all these ladybirds are more blood-thirsty in their habits than the perfect beetles, and the larva of the little Convergent Ladybird is so essentially a cannibal, that whenever other food fails it will turn to and devour the helpless pupæ of its own kind. It is a rather cruel, and withal a cowardly act, to thus take advantage of a helpless brother; but in consideration of its good services, we must overlook these unpleasant traits in our little hero's character. All these larvæ (worms) bear a strong general resemblance, and with the aid of Fig. 31, *a*, and the annexed Fig. 32 (the hair-line at the left showing the natural size), a good idea may be obtained of them. They run with considerable speed, and may be found in great numbers upon almost all kinds of herbage.



[FIGURE 32.]

The eggs of ladybirds greatly resemble those of the Colorado potato beetle, and are scarcely distinguishable except by their smaller size, and by a much smaller number being collected together in a single group. As these eggs are often laid in the same situation as those of the potato beetle, care must be taken by persons who undertake to destroy the latter not to confound those of their best friend with those of their bitterest enemies.

METEOROLOGY.

BY PROF. F. HAWN, LEAVENWORTH.

The winter has been an unusual one in relation to temperature and humidity. It will be seen by the table herewith exhibited, that the mean temperature at the signal station at Leavenworth, Kansas, was 39.4°, which is 9.76° above the average for a series of years. This accumulation accrued as follows: In December, 14.34°; January, 5.8°; and in February, 9.05°.

In the spring months there was also an increase in the average temperature of 3.5°, which is chargeable to the months of March and April, while May fell 1.3° below.

The summer exceeded the mean temperature by 2.2° , accumulated in July and August, while June fell a fraction behind.

Autumn had also an increase in temperature of 2.5° .

The year closes with an increased temperature of 4.6° above the mean. The highest temperature occurred in August, and marked 100° ; the lowest in January, which was 6° above.

The winter rains were unusually heavy, amounting to 8.46 inches—an excess of 5.04 inches above the mean. In the spring an excess of 3.17 inches; in the summer an increase of 1.37 inches, and in the autumn a wantage of 2.01 inches. The year closed with an excess of 4.83 inches above the mean of 34 years.

The thermal mean of the winter was the highest ever known here, with a minimum of only 6° , yet we have had an anomaly in the failure of our fruits, more conspicuous than after the winter of 1873, when the mercury fell once to 26° below zero.

In seeking for the causes of the frequent failures in our fruits, too much consideration has been given to temperature alone, whereas there are undoubtedly often a complication of causes, such as the condition of the tree on entering the winter, sudden changes, the condition of atmospheric humidity, whether the trees were thawed suddenly in sunshine or gradually in cloudy weather, the high winds or rains during the blooming season, and the too rampant tree growth the previous season.

I have no results to exhibit under most of these heads except one, and that in a small way, but illustrating the influence that moisture and absence of light have on frozen plants. During the winter I nursed some parlor plants of tender exotics. They passed through the winter in a flourishing condition. By one night's neglect I found my pets frozen stiff, and the earth in their pots so hard as to be unimpressible to the hand. Without delay I procured a large washing boiler that was close at hand; put a wet cloth on the bottom; put in the plants; covered them with the lid, and let them remain in this condition for twenty-four hours, when they came out as bright as if they had never had a contact with Jack Frost; nor did they subsequently show any diminution in luxuriance.

The failure of the past year, however, was peculiar, and not easily assigned to any of the above causes, except an exuberant tree growth of the previous year, and the mild, moist temperature of the winter, preventing the trees from coming to a complete rest, so necessary to recuperate for the coming crop.

Forecasts of the weather have been prominent subjects of attention from an early period of civilization to the present. Many definite objects—such as the different phases of the moon and her latitude in a specified time—have served as a delusion of the silly, when a few consecutive observations of an intelligent lad of fourteen years could have discovered the fallacy. The more rational and useful deductions are drawn from meteorological con-

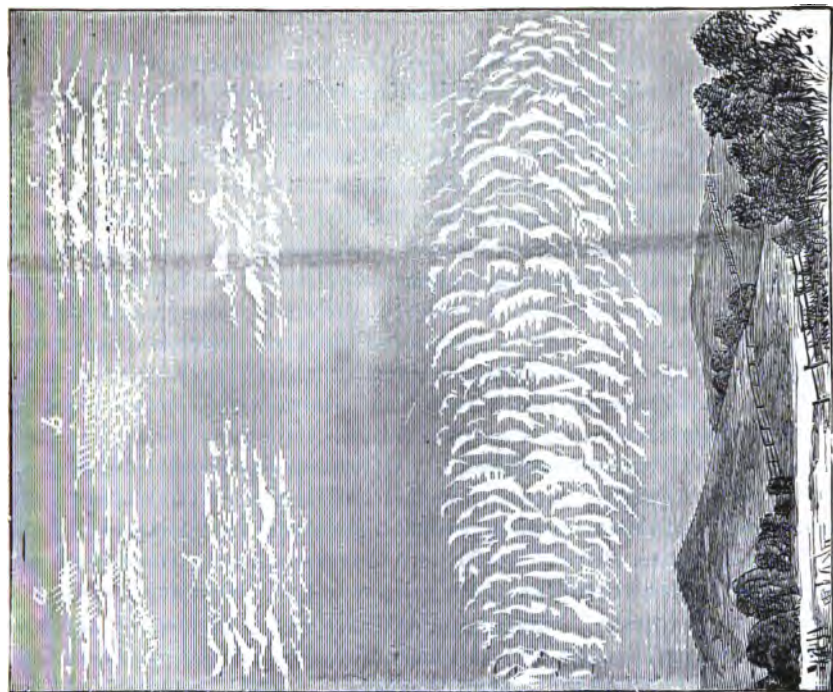
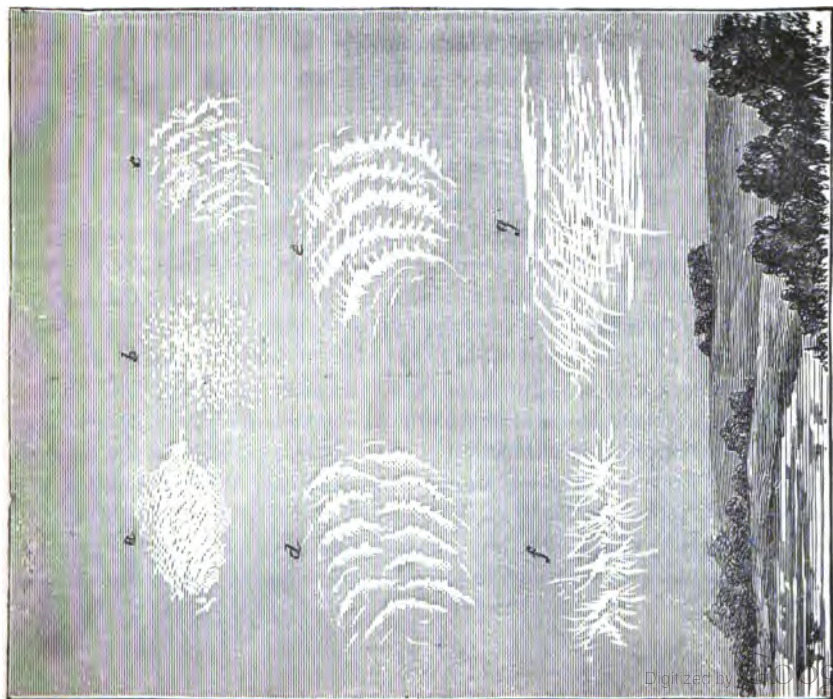
ditions and the changes of the clouds. The latter, the more simple and practical, were the criteria of most of the nations of the earth; and even the Indians of this continent have some useful knowledge in this connection.

In Judea, Christ, in answering the Pharisees and the Sadducees, who were seeking a sign from heaven, said: "When it is evening, ye say it will be fair weather, for the sky is red. In the morning, it will be foul weather to-day, for the sky is red and lowering. O! ye hypocrites, ye can discern the face of the sky, but cannot discern the signs of the times." While these distinctions have also like premonitions in the more humid atmosphere in the north Atlantic States, here in the dry atmosphere of Kansas the morning red is more often succeeded by high winds, while the evening red denotes continued fair weather. I might here remark that there are many meteorological signs, principally in the character and color of the clouds, that are nearly infallible when taken in connection with the humidity of the atmosphere and direction of the wind. These factors can be ascertained by instruments that may be purchased for a song, and any school boy or girl of fourteen years can use them.

More recently, and within the present century, the clouds have been more closely classified, and some valuable practical deductions drawn therefrom. Among the many forms, I shall refer to but one class—the *cirro-stratus*, or ice clouds—as illustrated in the accompanying plates, Nos. V, VI. These clouds are among those that appear at the highest altitude, or over thirty thousand feet. In whichever way the wind may be at the surface, these *cirri* always come to us from the westward—about 15° north of west—with an increased angle during the winter.* They are harbingers of a storm of either rain or wind, or both, conditional on the state of the lower atmosphere. When they appear in the summer, and the surface winds contain over 70 per cent. of moisture, a thunder storm will follow, and the force of the storm will be in ratio to the humidity of the surface atmosphere, inversely as the mean pressure of the barometer for six hours previous. Under all circumstances a fall in the temperature follows, and often intense cold in the winter, especially when form *b*, No. V, are developed into half the diameter of a full moon. Form *d*, No. VI, is the more readily distinguished, and the most reliable, so far as my observations extend.

Our easterly winds are abnormal—never in sufficient volume to move the lower clouds from their normal course, even when at an altitude of five thousand feet. These winds are like those of the Orient centuries ago, where they were typical of bluster and weakness, as thus expressed: "Should a wise man follow after vain knowledge, and fill his belly with east wind?" (Job xv., 2.) This lack of force and volume in these easterly winds precludes the supposition that our excessive rains originate in their moisture.

*THE normal direction of all our storm clouds is from the westward. I remember two exceptions occurring last summer, the clouds then coming from the eastward. During their prevalence "cloud bursts" occurred at several localities in the valley of the Missouri.



CIRRO-STRATUS (HOWARD) ICE-CLOUDS.—a, b, c, d, e, partial formation; f, perfect formation; g, nascent formation.

Prof. Arnold Guyot, in his lectures on "Earth and Man," observes: "We see that in leaving the coasts for the interior of continents, there is a gradual diminution of the quantity of rain and of rainy days. The annual quantity of rain-water between latitude 38° and 40° north is: At Philadelphia, Pa., 45 inches; at Marietta, Ohio, 41 inches; and at St. Louis, Mo., 32 inches." This ratio of decrease continued to Leavenworth, Kansas, would make our annual rains less than 20 inches, whereas it is within a fraction of that at St. Louis. But this even is an exaggeration. Prof. Guyot further says: "This continent, being exposed at the same time to the winds of the Atlantic on the east, and to those of the Gulf of Mexico on the south, receives rain-waters from both directions. This is especially true of the middle region, situated west of the Alleghanies. In this way the decrease, owing to the distance from the Atlantic, is disguised by the additional rain-water brought thither by the winds of the Gulf of Mexico." Of these rains from the south, St. Louis receives a portion, but the direction and tendencies of the storms, as shown by the accompanying map, precludes the supposition that any of their elements reach here. It will then be seen that by excluding those southern rains from the count at St. Louis, her rains would fall below ours here.

Our rains from easterly winds occur exclusively in cold weather, and are always very scant, and more come from the northeast than southeast. A close approximation of the amount from those quarters may be made by taking the sum of our average winter rains, which is 3.42 inches; one-half of the autumn, 3.78 inches; and one-third of the spring rains, 2.24 inches, amounting to 9.64 inches. This would leave 21.70 inches coming from other quarters. Now, as the southwest and northwest winds are our normal winds, the source of those 21.70 inches must be within their scope.

As will be seen from the weather map for February and the barometric review, all storms that originate in the region of the Gulf of Mexico pass north and then northeast, and those that develop on the Pacific coast, in the Rocky Mountains and on the Western plains west of the Mississippi river, pass on easterly, most of them centering on the great lakes, though this year was exceptional, these storms in February taking a general course toward the Gulf of Mexico (as may be seen by the accompanying map), and thence by the Gulf influence they pass on toward the great lakes, near the normal course of the Gulf storms. From the area of high pressure on the Pacific coast, a volume of moist air is forced up over the Sierra Nevadas and the Rocky Mountains, and sent on its northeast or eastern course. This moisture, which has become much attenuated on arriving over the comparatively moister and heavier air in the valley of the Mississippi, relieves the surface stratum of its pressure, creating an ascending current; the lower and upper currents commingle, condensation (more probably thawing) of the cirrus clouds takes place, which soon become hazy, and then cloudy until rain begins. But, however, should the lower atmosphere be too dry, it absorbs the

humidity thus condensed, and no rain will fall.* In this process we observe that although the easterly winds and the moisture they carry are insignificant of themselves, yet as forming an element in the combination of storms, are indispensable. But it is known that by far the larger number of the rain storms originate in the mountains, and are governed by the same laws and take the same direction of those from the Pacific coast, the moisture being supplied by the melting snows.† It is then obvious, that in proportion as the snows are distributed in the mountains in the winter, will be the moisture eliminated and absorbed by the atmosphere and wafted down to us, as we have seen, to be condensed into rain.

Prof. Guyot further says: "The mountain chains are, then, the great condensers, placed by nature here and there along the continents, to rob the winds of their treasures, to serve as reservoirs for rain-waters, and to distribute them afterward, as they are needed, over the surrounding plains." This is just what the Rocky Mountains are doing. During the rains on the Pacific coast (which always occur in the winter), moist air is forced up on the western slopes, and, on ascending up into frigid temperature, is converted into snow, and in this condition it is distributed in the valleys, gulches, cañons, and on the mountain-tops, "to serve as reservoirs for rain-waters, and to be distributed afterward as they are needed over the surrounding plains," increasing or diminishing our rains in proportion to the existence of the snows in the mountains. If the deposit is light, it is soon exhausted, and after the early spring rains a drouth will ensue. If the fall in the previous winter was heavy, protracted and copious rains will be the result until late in the summer. The Signal Service reports show that those influences extend over most of the lower Missouri valley. This has been the experience, without an exception, since the transmission of intelligence from those regions has been speedy, accurate and reliable.

The following descriptions of the progress and characteristics of the storms in the month of February, as delineated on the map with corresponding numbers, copied from the Signal Service *Monthly Weather Review*, show the great improbability that the moisture over eastern Kansas condensed into rains is not from the Gulf of Mexico, and that the illustrations show adverse effects:

No. I.—A low pressure was developed on the morning of the 1st in the west Gulf States. On the 1st and 2d, accompanied by brisk winds and light rain in the Gulf and south Atlantic States, it moved in a southeasterly path into the east Gulf. On the 3d it advanced over Florida, and thence pursuing a track nearly parallel to the Gulf stream, it gave rise, on the 4th, to

* THIS principle is promulgated by the United States Signal Service, in a circular of instructions for the practical use of the meteorological reports and weather maps, 1871, p. 32.

† FROM observations in 1873, at an elevation of 10,000 feet up in the Rocky Mountains, in a clear day, and at a temperature of 60° F., all of the melting snows passed at once into vapor, and were absorbed by the atmosphere, which was so rarified that two feet above the snow it could concentrate only thirty per cent. of the humidity.

the high winds and heavy rain that prevailed in the south Atlantic States on that day.

No. II.—This depression can be traced from the Pacific. On the 4th there was a rapid fall of the barometer in Oregon, and severe southerly gales prevailing on the Pacific coast on that day. The center of the low area moved to the southeast, and on the morning of the 5th the lowest pressure was in Wyoming, and thence the low area pursued its southeasterly path, and by the morning of the 6th had developed into a storm of considerable energy, central in northwestern Texas. At the morning report of the 7th, the lowest barometer was at Shreveport, La., with the highest pressure in the Middle States. At this time high southeast winds and heavy rains were reported from the east Gulf States, while in Texas the winds had veered to the northwest, with colder, clearing weather and rising barometer. The storm, rapidly increasing in energy, had moved by the morning of the 8th into the Ohio valley. The storm center then moved, with slightly diminishing energy, over the Middle States, and the wind directions show that on the morning of the 9th it had passed beyond the New England coast.

No. III.—This apparently was a subsidiary low area, developed from the great depression No. II, that crossed from the Pacific ocean. On the morning of the 5th the center was at Dakota; thence the depression moved slowly to the eastward, over Lake Superior, attended by light, brisk, south-east winds, veering to the colder northwesterly, and occasional light rain or snow, until, on the 7th, it disappeared north of Lake Huron.

No. IV.—This depression is traced from the Pacific. From midnight to morning of the 6th a rapid fall of the mercury occurred on the coast, and heavy rain or snow fell on that and the succeeding day on the slope west of the Rocky Mountains. At the morning report of the 7th the barometer was lowest near Salt Lake. On this day the maximum wind velocity for the month was reported at Pike's Peak at 75 miles per hour, north. The depression moved very rapidly in a southeasterly path, and the morning of the 8th showed a low area in northeastern Texas. During the day this depression moved slowly to the east, and during the night to the northeast, and by the morning of the 9th was central in Tennessee and the Ohio valley. On the 9th it moved to the east, giving rise, in connection with the rising barometer in the upper lakes, to high northeasterly gales in the Lake region. On the 11th the storm moved beyond Nova Scotia.

No. V.—This low area is traced from the Pacific. The barometer fell rapidly on the Pacific slope on the 11th, and very severe gales, with heavy rain, were reported from that coast on that day. On the morning of the 12th, the depression was central in Utah, and then advancing rapidly in a southeasterly track, the low area was, at the morning report of the 13th, central in the Indian Territory. During the day, thunder storms were reported from the Gulf States. On the 13th and 14th, the low area gradually extended, with frequent rains, over the south and southwest; but there appears to have

been no well-defined storm center. On the morning of the 15th, a trough of low pressure extended from Lake Erie to the Gulf of Mexico, and during the day this depression was filled up by the inflowing air.

No. VI.—This depression is also traced from the Pacific. The morning report of the 13th showed a rapid fall in the mercury in California and Oregon, with heavy rain and high southerly gales. The low area moved, with diminished energy, in a southeasterly track, and was last noted as an independent depression at the midnight report of the 13th, when it was central in Utah.

No. VII.—On the 13th, there was a considerable fall of pressure in Florida and Cuba, accompanied by brisk easterly winds, heavy and frequent rains, with occasional thunder storms. On the 14th, the depression traversed Florida in an easterly track, and was rapidly followed by clearing weather and westerly winds.

No. VIII.—A storm of considerable energy prevailed, with high southerly winds and heavy rain, on the Pacific coast, on the 14th. The depression moved, with diminished energy, eastward to the Rocky Mountains, and was there filled up by the inflowing air. Its path was too uncertain to be charted.

No. IX.—On the 15th, the barometer fell slowly in the Northwest, and a center of the low area thus developed moved, on the 16th, into Wisconsin. On the 17th it advanced over the lower lake region and Middle States, and by the morning report of the 18th it had got beyond the New England coast. In its passage it was accompanied by brisk but not high winds, and frequent but light rain fell to the south of its track, and light snow to the north.

No. X.—During the night of the 15th and 16th, there was a rapid fall of the mercury on the Pacific coast, with severe southerly gales and heavy rain. The storm was followed by rapidly rising barometer. Its track was too indefinite to be charted.

No. XI.—This depression was traced from the Pacific. On the 17th, there was a decided fall in the barometer in Washington Territory. On the 18th, the fall had extended to the Northwest. On the 19th, the center of the depression moved in a southerly track into Missouri. On the 20th, the lowest pressure was transferred to the Indian Territory. On that day, the storm increased very rapidly in energy. Several thunder storms were reported from the Gulf States and Tennessee, while the rain area extended over the Ohio valley, lake region, and the Middle States, with snow in New England. On the 21st, the storm, still increasing in energy, became central in the Ohio valley, and on the same day the barometer rose rapidly in New England and Nova Scotia. At the morning report of the 23d, the center of low area had moved into Canada, near the Georgian Bay. It then advanced with rapidly-diminished energy, in an easterly path, into Nova Scotia, and disappeared, on the 24th, beyond the coast. This was an unusually severe storm, and during its passage from the Pacific to the Atlantic, the following high velocities are reported: On the 17th, at Red Bluff, Cal., 44 miles, southeast; on the 20th,

Dodge City, Kas., 60 miles, north; Stockton, Texas, 52 miles, west; New Orleans, 40 miles, southeast; Mobile, 42 miles, southeast; on the 22d, at New London, Conn., 80 miles, east; on the 26th, at Mt. Washington, 150 miles, north.

No. XII.—On the 23d, the mercury fell in Oregon, with southerly winds and frequent rains; the center of the low area moved in a southerly track along the coast, and at midnight of the 24th it was near San Diego, Cal. On the 25th, it moved rapidly in a southwesterly track, and at the morning report of the 26th, the center of the low area was situated to the southwest of Brownsville, Texas. On the 26th, it moved over the Gulf in an easterly track, and was accompanied in the Gulf States by easterly winds, backing to northwest. On the morning of the 27th it was central in southern Florida, and on that day moved east beyond the coast. The rainfall in southern Florida was excessive. During its passage the following maximum wind velocity was reported: On the 22d, at Indianola, Texas, 84 miles north.

No. XIII.—On the 25th and 26th, there was a general fall of the pressure on the Pacific coast, with heavy rains and southerly gales. On the 27th, the center of low area had moved into Utah, and on the 28th, still pursuing a southern track, it had advanced into Texas.

METEOROLOGICAL CONDITIONS AT LEAVENWORTH, KANSAS, 1878.

The following statement shows the highest, lowest, and range of barometer; the highest, lowest, and range of temperature, with the mean for each month, each season, and for the year, and the mean of the maximum and minimum; the relative humidity; the amount of precipitation and prevailing direction of wind for each month, together with the highest velocity and yearly movement, in miles; also, the comparative temperatures and precipitation of previous years, as recorded at the station of observation of the Signal Service U. S. A., at Leavenworth, Kansas, during the year ending December 31st, 1878:

DATE.	THERMAL.						RAIN.	WIND.
	Maximum.	Minimum.	Mean.	Mean of 5½ years.	Mean maximum.	Mean minimum.	Mean of 5½ years (inches) ...	Mean direction.
December, 1877.....	67°	13°	44.2°	29.77°	51.3°	37.7°	3.18	
January, 1878.....	56	6	32.8	28.00	41.3	27.1	2.34	S.
February, 1878.....	66	18	40.2	31.15	46.9	38.4	2.94	N.
WINTER.....	67	6	39.4	29.64	46.5	32.7	8.46	
March, 1878.....	80	28	50.9	42.2	60.2	41.0	2.35	N.W.
April, 1878.....	80	35	58.8	55.4	68.5	47.9	2.86	S.
May, 1878.....	85	37	62.3	63.6	70.9	52.2	5.28	S.
SPRING.....	85	28	57.3	53.8	66.5	47.0	7.32	
June, 1878.....	91	49	70.5	71.3	79.5	61.5	5.27	S.
July, 1878.....	100	61	80.3	76.7	89.6	71.5	3.08	S.
August, 1878.....	99	58	78.9	74.2	89.9	69.4	3.31	S.W.
SUMMER.....	100	49	76.6	74.0	86.3	67.5	13.03	
September, 1878.....	93	41	67.8	66.1	79.0	57.0	2.64	S.
October, 1878.....	86	20	55.2	54.5	66.0	45.2	1.16	S.
November, 1878.....	71	25	45.7	40.4	55.6	37.0	1.76	N.
AUTUMN.....	93	20	56.2	53.7	66.9	46.4	7.57	
Year.....	100	6	57.4	52.8	66.6	48.4	31.34	S.

Highest velocity of wind during the year, 52 miles per hour, from the southwest, on April 9th, 1878. Total number of miles registered during the year, 58,202.

BAROMETRIC.

Highest barometer during the year..... 30.600
 Lowest barometer during the year..... 29.088
 Range..... 1.512

THERMOMETER.

Highest thermometer during the year..... 100°
 Lowest thermometer during the year..... 6°
 Range..... 94°

COMPARATIVE TEMPERATURES AND RAINFALL.

Years.	Mean tem- perature...	Total rain- fall (inches)	Years.	Mean tem- perature...	Total rain- fall (inches)
1872.....	52.4°	42.75	1876.....	53.2°	44.48
1873.....	52.6	35.17	1877.....	54.1	52.06
1874.....	54.8	33.65	1878.....	55.6	35.15
1875.....	51.4	31.26			

Compared at office of Chief Signal Officer, Washington, D. C., March 20th, 1879.

In closing, I would acknowledge my obligations for many favors to Samuel W. Rhodes, the efficient and intelligent officer in charge of the signal station at Leavenworth, Kansas.

DIVISION SOCIETIES.

NORTHWESTERN HORTICULTURAL SOCIETY.

BY E. A. TAYLOR, SECRETARY, BELOIT.

OFFICERS FOR 1879.

President.....H. C. SNYDER, Glasco. | *Secretary*.....E. A. TAYLOR, Beloit.
Vice President.....R. W. KNOX, Cawker City. | *Treasurer*.....H. T. WALKER, Beloit.

The third annual meeting of this Society was held at the city of Beloit, Mitchell county, on February 12th and 13th, and opened its session in the Opera House, at 2 o'clock P. M. of the 12th—the President, H. C. Snyder, in the chair. The exercises opened with music by the Beloit Cornet Band, and the Society was received by the citizens of Beloit in the following address of welcome:

ADDRESS OF WELCOME.

BY THE MAYOR, MR. VREELAND.

MR. PRESIDENT, AND GENTLEMEN: We are gratified, this evening, in having the opportunity of welcoming to Mitchell county and the city of Beloit so important a delegation of intelligent gentlemen, representatives of the beautiful art and patient industry of Horticulture—for it is no less an art than an industry; and I assure you, gentlemen, that the citizens of this commonwealth appreciate your presence, and I trust will unite with you most cheerfully and heartily in the consideration of this matter—a matter that not only concerns the few, but the entire community of northwestern Kansas.

It is undoubtedly necessary for the successful production of horticulture that there should be an organization of patient and persevering men, willing to labor long and patiently in order to accomplish the laudable purposes for which you, gentlemen, are here assembled—that of awakening an inquiry and disseminating practical knowledge, gathered by real workers. A long season of dark depression and great discouragement to our nation is passing away, and now, if we will work diligently, trusting a kind and over-ruling Providence, the future will gladden and brighten our lives, and make us wiser and better men and women.

We of the "Great American Desert" feel a just pride in our successful competition with older States and foreign nations, renowned for their proficiency in horticulture, and our exhibit to the world of near 40,000,000 bushels of

wheat and 100,000,000 bushels of corn for the year just closed, as some of its minor products. We should thank God that our lots are cast in this beautiful land of freedom and homes, where the toiling masses own an interest in the soil, and where fanatics, communists and socialistic conspirators should receive just but swift retribution.

Horticulture or gardening are among the first fruits of civilization. Away back in the records of Roman history, we hear of small gardens filled with the royal rose and the modest violet. Along with the ring of warlike achievements and heroic deeds, Greece excelled in some of our own cherished beauties. Germany, about the fifteenth century, began to make herself known in the plant world by her celebrated gardens and skilled botanists. After the conquest, England excelled in her trimmed hedges and design gardening, and has since then made sure and rapid strides in scientific horticulture.

Within the last twenty-five years, in our own country, a perceptible change has taken place in the popular tastes, shown by an increasing love for trees and flowers, and marked by the valuable works written upon that subject.

Before the Christian era, the Romans tell of a beautiful young lady, called Flora, who left to the commonwealth of Rome a large amount of money, providing for an annual festival to be kept in her honor, that her name might live through time. The city fathers, after serious deliberation, decided to enshrine her among the minor deities as Flora, Goddess of Flowers, and yearly festivals held on the first of May kept her name before the people. Though this may be a fable, and the beautiful flora a myth, we all worship at her fair shrine, and love her sweet name.

And to you, my friends, I would say, let your good influence be felt and your names be enshrined in the hearts of your townspeople and your families, by the adornment of your homes and the improvement of this fair art. Mr. President, and gentlemen, in the name of our people I welcome you.

The band then discoursed some very excellent music; after which Capt. Snyder replied, in behalf of the Society, in a very neat speech, showing the advancement that had been made in the last ten years, in the history of this part of Kansas in particular. After the response, C. H. Sheffield read an essay on the practicability of horticultural societies in northwest Kansas, followed by music by the band.

The following essay, by appointment, was read:

FAILURE IN ORCHARD CULTURE.

BY E. A. TAYLOR, BELOIT.

The subject given me for this essay is a compound one, and for want of time I cannot analyze it in minute detail; but, like some of our Western farmers, who lay more stress on the number of broad acres they cultivate than they do on the thoroughness of cultivation and the aggregate yield of the crop, I must hurriedly skim over, hoping the gentlemen will be thorough in the details when this essay is handed over for discussion.

The causes of the general failure which our people have experienced in their efforts to grow fruit orchards I will enumerate, as follows:

First, a want of proper preparation of the soil.

Second, lack of knowledge as to the varieties suited to our soil and climate.

Third, damaged condition of the trees when received from the tree dealers.

Fourth, a want of knowledge how to plant trees, and their after-culture.

Fifth, a want of information of the enemies which prey upon our trees, such as borers, insects, etc., and the proper means of guarding against them.

Sixth, general unwarrantable negligence.

I will not add the seventh, eighth, ninth, etc., as might be done to bring in nice points for theoretical discussion; still, something might be said to advantage on pruning, though ideas differ on this subject about as much as on styles of dress. Some believe in letting nature take its course, while others would cut and slash as if they were out of a job and had nothing else to do.

I claim that it is practically impossible to thoroughly prepare our wild prairie, with its hard clay subsoil, for tree planting in less than two years, and that to accomplish the object in this short time the soil must be constantly on the move. A tree should not be set in soil until it has been pulverized to the depth of fifteen inches, and I have not been able to accomplish this in less than twenty-four months. I do not deny but that the earth can be plowed to a greater depth within this time, but it requires time, rain, snow and freezing to pulverize our soil. During a twenty-three years' residence in Kansas I have known but two drouths that have seriously injured trees that were set in thoroughly-cultivated ground; but during this time there have been just about twenty-three drouths that have seriously injured trees that were set in poorly-cultivated soil. I have frequently said, and will repeat it here, that I would rather have a fertile soil and arid climate than the poor, stony soil and humid climate of the East.

First: We must preach and practice deeper plowing and cleaner cultivation. It is very seldom that we have a drouth that will dry out a field of loose soil fifteen inches deep, and it is, also, seldom that we have a season that does not bring with it a drouth that will burn out crops which are plowed only three or four inches deep. Hence it is that we have so many wheezy and burnt croakers among our shoddy farmers, who, in a dry season, are found complaining "that we can't raise anything in this country." And in a year when even their style of farming produces a crop, they complain because "we can't get nothing in this country for what we raise."

Second: A lack of knowledge of varieties suited to our country. We know that oranges and figs do well in Cuba, and that apples do not. It is also known that oranges and figs do not succeed in Kansas; and it is time that we knew that there are some kinds of apples, peaches and grapes that do not, although it has become a well-established fact that there are some varieties of the last-named fruits that arrive at their greatest excellence in Kansas. Some kinds of fruit do well in California or New York which are

failures here, and *vice versa*; hence the importance of our ascertaining what sorts do succeed best in our locality; and we are fortunate to be able to ascertain this knowledge without making expensive and tedious experiments, involving years of time. Our horticulturists of the eastern part of the State have passed through this ordeal, and have accomplished a work which is worth thousands to us, and all that we need to do is to take up the reports of that grand organization and general benefactor, the Kansas State Horticultural Society. From these reports can be obtained a list of the varieties that have been most successfully grown and fruited in Kansas during the last twenty years—a list from several hundred sorts which have been tried. Why not use judgment in buying fruit trees, as well as in other branches of business? Who has not been victimized by some fine-haired fruit agent with smooth tongue, loose at both ends, offering some new kind of fruit or vine bearing very heavy crops of fruit of prodigious size, great excellence, and a remarkably early bearer—in fact, a real world-beater?

If we lack information, let us seek it from a legitimate source. The most of our farmers will remember the gentry who introduced the dwarf fruit last year, and those who read the *Gazette* will probably remember what the President and Secretary of the State Horticultural Society had to say on the subject of dwarf fruits. Notwithstanding neither the President nor Secretary had any trees to sell, nor were in any way interested, except in the general good of the people and the horticultural success of the State, still, some individuals could not see but what the tree peddlers were the best authority of the two; and one person signing himself J. D. S. wrote to the *Toledo Blade* asking, "Are dwarf trees a swindle?" The answer was, "Dwarf trees are not a swindle;" and the answer was correct. A wild grape vine is not a swindle in and of itself, nor is a wild crab apple a swindle *per se*, nor is any other of nature's works; but who will say that if a party sells the wild grape vine or crab apple as a valuable fruit for general culture, asking and receiving fabulous prices on the strength of these representations, that it is not a swindling transaction?

It is truly said that "a little knowledge is dangerous," and a little knowledge is all that J. D. S. obtained; and he did not know how to apply that little, but hurries off to the *Gazette* office to give it publicity, like young lawyers and bumble-bees, that are said to be largest and noisiest when half-fledged. Why did J. D. S. resort to the question column of the *Blade*, instead of the National or some of the State horticultural societies? Has the question-and-answer column of the *Toledo Blade* been his panacea on serious matters, such as settling love-spats with his sweetheart? There must have been some affiliation between him and that question column; or perhaps he is a Nasby Democrat, and believes Nasby and the *Blade* standard authority on everything. But J. D. S. should know that while all Democrats believe Nasby sincere and as good a Democrat at heart as any, still, many think he is doing the party more harm than good.

Third: I will now pass on to the third difficulty. Probably three-fourths of the trees that our people have paid for have either been entirely dead or seriously damaged by exposure. Doubtless it is an advantage to a tree-peddler to form new associations, and learn the ways of the world; to take a circuit on the cars, and travel far from home, where he can throw off all restraint and responsibilities, in order to weld on the cast-iron cheek, oil up and key his bazoo for the necessary chin music. But it is of no advantage to trees and vines to travel far from home, around the country, on cars and in wagons; to be exposed to our genial sun, balmy breezes, and our light and invigorating atmosphere. If you have not a reliable nursery to which you can go for trees, send your orders directly to the proprietor of the nearest one; you may depend upon it that there will be no dead or worthless stock or swindling prices imposed upon you. Solomon said that "A fool's eyes are to the ends of the earth." Has not this saying been verified by people sending off for trees?

Fourth: A want of knowledge of how to set out trees and vines has, in many cases, caused entire failures. I have known men to set their trees and vines twelve to eighteen inches too deep, thinking that they were giving them the best possible treatment. The result is that the bark on the body of the tree that is so unnaturally buried rots off, and the tree makes but little growth, and soon dies, thereby adducing another proof that "trees won't grow in Kansas."

Fifth: A lack of knowledge of the insects, borers, etc., which subsist on our trees and vines, is another cause for the loss of many investments. On this subject, I cannot enter into the details, but would say emphatically that it is useless for people to pay out money for trees, and spend time and anxiety in their culture, unless they know how to protect them from these pests. The farmers should organize horticultural societies throughout the country, and meet every two or three months. There is scarcely a neighborhood but what some citizen in it can give the necessary information on these subjects.

Sixth: And last, negligence is another cause why Kansas is not and never will be adapted to fruit growing. How many are there among us who set out trees, and leave them to take care of themselves; not realizing that they are of as much importance and require cultivation as well as corn and potatoes, and are not brought to the realization of the fact until we see the leaves dry up and turn brown. There is a class of people who buy trees annually, and let the cattle and rabbits destroy them through the winter.

But the longer I pursue this subject, the more fault-finding I become, and you doubtless think it is time for me to give you a rest.

DISCUSSION UPON THE ESSAY.

J. NELSON: Does building paper wrapped around the bodies of trees injure them? I have used it, and they appear injured.

C. H. SHEFFIELD: A. M. Purdy, editor of the *Fruit Recorder*, of Palmyra, New York, gives an example of injury from such treatment.

MR. McGRATH: Welcome Wells, of Manhattan, recommends the use of such paper for wrapping.

MR. ALLEN: A good knife is the best remedy for borers.

The discussion led to the planting of shade trees, the advantages of which were generally conceded. The question as to the time to plant trees was proposed.

E. A. TAYLOR: Some varieties will succeed if planted in autumn, and others will fail. For general planting I would recommend spring time.

MR. LONGWORTH: I believe spring the proper time to plant trees, etc.; would set the trees about three inches deeper in the ground than they were in the nursery.

MR. McGRATH: Trees will start in spring much earlier if planted in autumn.

C. H. SHEFFIELD: Trees set two inches deeper than they were in the nursery do better than those planted deeper; would plant twenty-five feet each way, and alternate with peach trees.

R. C. KNOX: There is no danger of the trees sun-scalding if headed low, and well leaned to the southwest.

E. A. TAYLOR: There is not much danger with heads grown low and a vigorous growth kept up.

JUDGE HOLT: My trees were injured by wrapping the bodies with building paper.

E. A. TAYLOR: Tarred paper is safe for trees two or more years old.

JUDGE HOLT: I cannot concur in the recommendation of Mr. Taylor; I believe it will prove an injury.

The committee on time and place for the next meeting of the Society reported favorably to Cawker City.

On motion, the report was adopted.

FLORICULTURE.

JUDGE HOLT: Are hybrid-perpetual roses hardy, and do insects injure them?

C. H. SHEFFIELD: Some varieties are very hardy.

E. A. TAYLOR: I prefer this class of roses to others. I have some thirty varieties, and would be pleased to exchange with members by slips or roots.

A large number of others engaged in the discussion on floriculture, with many very interesting remarks.

Discussion closed, and E. A. Taylor submitted a petition to the Kansas Legislature praying for a law prohibiting the killing of quails at any season of the year, fixing the penalty for so doing at \$25. After adopting an amendment to the amount of the penalty, making it \$5, the Society adopted the petition.

The constitution was amended so as to provide for a vice president in each county in the district.

Mr. E. A. Taylor made the following remarks, with reference to the ques-

tion, Are horticultural societies practicable institutions for northwestern Kansas?

Let me ask, are church associations, district and normal schools, agricultural societies, railroad meetings, political conventions, practicable in northwest Kansas? If any of the associations named are practicable, surely horticultural meetings are. For were not those days of Adam and Eve which were exclusively occupied in horticultural pursuits the happiest, holiest and most to be desired of any ever experienced by man? Then, if this is true, does it not stand us in hand to get back as near as possible to that original standpoint.

Those of us who are here are but just beginning, and the thousands on the way are like the sails on the ocean—their glittering sheets have been unfurled, and thousands of canvas-covered wagons are slowly but surely wending their way from all points of the compass to our country, where millions of the finest land await them, to be occupied by free and pleasant homes. This being the case, how important it is that we commence understandingly, and not blunder along by accident, and be like the “blind leading the blind.”

When we set out a tree or vine, we set it out expecting it to grow, bear fruit, and remain a lifetime, and to be a joy forever; and whether we realize our anticipations depends entirely upon whether we prosecute the work intelligently. It is as truly impossible to have a conveniently and tastefully-arranged fruit or agricultural farm by accident, as it is to build a finely-proportioned and nicely-arranged residence by accident.

What we are striving at, is to do away with this how-come-you-so style, and work on a more intelligent and systematic plan; and now, above all others, is the time to begin, while we are beginning at the commencement and cutting into whole cloth—for we are not stepping into dead men’s shoes.

Let us say to every man who is opening up his homestead, consider that you are laying the foundation of a home for yourself and your children. Therefore, strive to make it cheerful, comfortable and attractive, for these are the requisites necessary to endear our children to home associations, rather than town, loafing corners, saloons, and places of low amusements in general.

Let every man who takes a homestead sit down and map out his farm. This should be his first work—to locate his dwelling house, its surrounding yards, his barn, orchard, pasture and grain fields. Let all this be drawn by a scale, and then there will be no confusion, and our work will be distinctly defined. What we want is to take advantage of past experience, and come right down to system; and it is the object of this horticultural society to study, learn and teach a better knowledge of agriculture and horticulture, and to arrive at more intelligent and systematic habits. For instance, if a man is going to put out a tree: 1st, Know when it should be set; 2d, Prepare the ground properly for it; 3d, Select the kind that succeeds in this country; 4th, Set it out right; 5th, Take care of it. If meetings of this kind are not

practicable in northwest Kansas, where on earth are they practicable? And if they are not practicable just now, when will they be practicable? We claim that right here is the place, and now, just now, is the time; and standing on these creeds, we propose to succeed "by works and by faith."

After which the Society adjourned, to meet at Cawker City, on call of the President.

SOUTHEASTERN HORTICULTURAL SOCIETY.

The following are the officers of this Society for the year 1879:

President—H. E. Van Deman, Geneva; *Vice President*—D. B. Skeels, Galesburg; *Secretary*—G. W. Ashby, Chanute; *Treasurer*—C. C. Kelsey, Humboldt.

Meetings are held quarterly during each year.

COUNTY AND LOCAL SOCIETIES.

ANDERSON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY M. A. PAGE, SECRETARY, GARNETT.

OFFICERS FOR 1879.

<i>President</i>	D. W. HOUSTON, Garnett.	<i>Secretary</i>	M. A. PAGE, Garnett.
<i>Vice President</i>	A. A. ADAMS, Garnett.	<i>Treasurer</i>	SAM. BUCHANAN.

The following papers were read at the meetings of the Society:

CULTURE OF SMALL FRUITS.

BY J. TAYLOR, OF GARNETT.

In the following brief essay I shall confine myself chiefly to my own experience and modes in present use; and being convinced that the influence of different soils on the several varieties of the same species is not sufficiently considered by most planters, I would call your attention to the importance of remembering that the experience here given is with a gray limestone soil, with red subsoil, underlaid at a depth of two to ten feet with limestone. The ground slopes to the west and east only sufficient to give good drainage.

GRAPES.

On the eastern slope is situated my vineyard of half an acre. The vines were propagated from cuttings, and transplanted in the vineyard at one year old. The rows are eight feet apart, and the vines six feet in the rows, tied to stakes, and one-half the last season's growth cut out in mild weather in winter. All the cultivation given is with a horse and double-shovel plow and hand hoe. Of the varieties we have tried, the following, in the order named, have succeeded best: Concord, Dracut Amber, Creveling, Ives Seedling and Norton's Virginia. Of the failures, the Iona, Isabella and Catawba.

BLACKBERRIES.

My blackberries are planted on the western slope. One half-acre was planted with good young plants, and half an acre with root cuttings. The former produced two full crops of fruit before the latter had filled the ground with a good stand of canes; hence, I calculate that my root-cutting experiment had cost me at least \$100 in loss of time and fruit, the care and culture of each being nearly equal. The original planting was made in six-foot rows, and plants three feet in the row. They were allowed to spread and form hedges two feet wide, leaving sufficient room to use a horse in cultivating.

A shallow plowing twice each spring, and the weeds cut from the rows with the hoe, is all the cultivation I give. When the canes are four feet high, cut off the tops to induce the development of lateral canes, and after the fruit is gathered, remove all old canes, and where the new shoots have started too thickly, cut out a part. One good cane is worth more than a dozen slender ones. I consider the Kittatinny the best variety to plant.

RASPBERRIES.

I make my raspberry plantation with one-year plants, or tips; plant six feet each way, and keep at that distance. Other treatment same as for blackberries, except giving a good dressing of manure in the spring, and cutting the side canes back to eighteen inches or two feet. Do not cultivate after July 15th, but allow the growth to stop and wood ripen before cold weather. The Doolittle Black Cap is the only variety I cultivate; have tried the Philadelphia and Purple Cane without success.

STRAWBERRIES.

Of the strawberry, the Wilson and Charles Downing both do well. My experience with this fruit has not been a profitable one, but I attribute my failure more to negligence than anything else, for I am satisfied from observation that nothing will give a better return, or more satisfaction, than a bed of Downing strawberries, if properly attended to. Prepare the ground thoroughly twelve inches deep; give each plant one foot square room; keep clean of weeds, and cut off all runners; mulch in winter with two inches of hay, and remove it before the plants start in the spring. The above constitutes the treatment until the fruit is ready to eat; and if you fail here let me know, and I will come over and give you a lesson.

CURRANTS.

Of currants, either the Red Dutch or Cherry will give you good satisfaction if planted where they will have partial shelter from the sun and wind.

SHELTER BELTS FOR ORCHARDS AND NURSERY GROUNDS, THEIR ADVANTAGES, BEST METHOD OF RAISING, AND CULTURE.

BY C. E. DEWEY, GARNETT.

MR. PRESIDENT, OFFICERS AND MEMBERS: It is with much diffidence that I undertake the task assigned me, not having graduated an essayist; but being not only theoretically, but also practically, enlisted and interested in the science and pursuit of horticulture, I will venture to offer a few cursory thoughts on the subject named in the order of business, adopted heretofore by this Society, viz.: "Shelter Belts for Orchards—the Planting, Culture, Advantages, &c."

Not having had personal experience in reference to the possible advantages or disadvantages that may accrue in their presence, or even in planting or cultivating the same for the protection of orchards, I of course am not prepared to talk from that standpoint. I was born, reared, have planted and

cultivated apple and other fruit orchards, and ate many a luscious fruit thereof for thirty years, in the old "Buckeye State," a heavily-timbered country; never saw a "prairie wilderness" till I came to Kansas, nearly twenty-four years ago. But if in Ohio shelter belts were essential for the protection of orchards, we had them, dense and lofty, of nature's own planting, and hence were scarcely led to consider the utility or otherwise of such an item in horticulture. We never thought of the sun "scalding" an apple tree, but were obliged to fell much heavy timber to let the sun in, as an essential element to sustain the life, health and vigor of the trees. We never thought of the need of protection (against the winds), for when a "Jimmy Cane" made his lofty strides over an orchard and uprooted our favorites, our natural "shelter belts" were swept by his besom as well. My father planted his orchard in Ohio over fifty years since, when your essayist had seen but few summers, but was able to hold an apple tree (they were very similar to a Yankee "bean pole") while father would stay its roots in the bosom of Mother Earth. Father would say, "Now, my son, you must hold this tree thus: perfectly erect, or it will never grow, and you will never get an apple to eat."

These were all "seedlings," and in after-years, when "grafting," as I suppose, was one of the secrets of Yankee invention, father's orchard of nine acres was all bereft of its top, and *improved royal* stock set in. Our trees thus grew erect, and were trimmed to leave the trunk limbless, so as to clear a high-topped hame, worn on a sixteen-hand horse, or about six feet high. Such an orchard here would be ruined the first season, as witness one set about one mile north of here, last season.

But we observe that in those timber States, to-day, the utility of such protection is not realized, but is expressly ignored; and our Garnett papers publish their teachings as applicable to Kansas orchards. See what the *Plaindealer* published in its issue of January 17th, under the head of "Sheltering Orchards," from the Germantown *Telegraph*:

"Among late topics introduced in some of our agricultural and horticultural contemporaries, is that orchards, to make them productive, must be sheltered on at least two sides from the cold blasts of winter. This shelter is to consist of hedges of evergreen trees, and be of sufficient height and density to make a secure defense.

"The thing, in our judgment, is a fallacy. Instead of proving advantageous to an orchard, we believe a hedge or protection of any kind would be a positive injury. Planting apple orchards in valleys and southern exposures will not, as a rule, be as healthy or yield crops at all to be compared to orchards planted in elevated positions, opened to the wind from every quarter. Indeed, if we were about to set an orchard out to-day, we should select a high, northern exposure. All our experience and observation go to show such a position to be the best. Those about setting out orchards, the coming spring, should avoid what they will be likely to find a serious error. It is a notorious fact that, even in Maine and other extremely cold States, northern exposures are selected for apple orchards, where they stand the severity of the climate much better than in valleys, or where they have southern exposures, or are sheltered. A Maine farmer says: 'Were I to plant an orchard, and had two locations—one a valley surrounded by

hills except on the south side, and the other a high elevation, exposed to the cold winds—I would choose the latter in preference to the former.' The same holds good as it regards peach orchards. A great object is to keep back the blooming as long as possible, and this can best be done in northern exposures without shelter.

"This, we think, will be found to be the experience in the Middle, Northern and Eastern States, of many observing apple growers. There may be some exceptions, it is true, but they are only the exceptions to the rule."

Now, Mr. President, I take it, from my observation, and from facts easily gathered by even a casual scrutiny, and reasoning thereupon, and from admitted causes to legitimate effect, and by comparison of the obvious workings of nature as connected with this subject, that Kansas (and, for that matter, all unprotected fruit-growing countries), to be successful, and secure the greatest profits from our investments in this department of horticulture, are clearly exceptions to the above rule. But I find, too, that some of the above class of teachers have transplanted themselves upon Kansas soil, who assert the planting and cultivation of shelter belts to protect orchards to be "sheer folly;" and more, "that they are a damage to orchards." Hear what Mr. T. C. Henry says: "I am of the opinion that an orchard can be grown as successfully without a wind-break as with one." Again he says: "Wind-breaks encourage a tender growth, hence a disadvantage. The northwester will go through them, and kill tender trees." Again he says: "It is well known that a stone wall four feet high will not only check the wind to a certain extent, but will also produce an eddy. Your wind-breaks will produce the same condition, and this is not desirable, as the severity of a freeze is greater where the circulation of the air is prevented." And further, he says that "notable injuries to trees in like situations, in hot weather, are produced by the same causes—prevention of the circulation of the air; the principle that extremes of heat and cold produce the same result."

I am aware that some, if not all, of these objections are obvious; but am also convinced from proofs, to my mind at least, which I have gathered, that the above-cited bad effects may be avoided, as I am satisfied that they cannot attach where the protection is properly planted and judiciously cultivated, but, on the contrary, will prove a very desirable benefit. I observe that Mr. Henry, above cited, has since expressly admitted that he could not hold that the wind-break was of no utility.

To avoid spinning too long a yarn, allow me to state, in short, what I conceive to be some of the obvious uses of the protection contemplated by its advocates, to an orchard:

The first, then, is, to keep the trees in proper position for uniformity and beauty, and thus avoid a strong liability to injury, decay, and other defects incidental to such abnormal conditions, and thus mar their beauty and lessen their profits. Second, to prevent the sun from "scalding" their exposed trunks and large limbs, and thus to give large opportunity to the flat-headed apple-tree borer to commit his death-dealing ravages upon your trees. Third, to allow a uniformity in fruiting on the tree; that while, or soon after

blooming, the fruit will not be destroyed on the south and southwest sides of the tree, while on the north and northeast sides it is overburdened with fruit. Fourth, to prevent the fruit from scalding in the hot sun of August and September. Fifth, to prevent unbroken currents of wind from giving the orchardist more windfalls than he is willing or able to take the most judicious care of, as well as thus lessening his anticipated profits. Sixth, to prevent the bleak northwesterners from roaming unbidden and unwelcomed, seeking whom they may devour of immature growth of limb or exposed tree; and, seventh, to prevent the wild, harum-scarum gales from roving unchecked through our orchards, seeking every disabled limb, overloaded or scarred tree, and mercilessly thrusting it to the earth, to the loss and utter dismay of its owner.

Seeing we have neither space nor time to devote to a discussion in detail of the items above enumerated, and hoping these few ideas as to the uses of "protection" may serve as a subject for more ample and elaborate discussion by the Society, I will now add a few additional ideas upon planting and cultivating shelter belts for the protection of orchards. But first, as to the kinds of trees we would deem it advisable to plant for such purpose. They should be as light feeders off the soil as possible, and serve the ends sought—also those that would naturally conduce to taste, beauty and uniformity; for we should ever endeavor to add beauty to utility in all we do for our own happiness and comfort, or that of others of our fellow-kind. This protection should not be of very late, or slender and limbless growth, as we think such would not secure our object. The belt should not be so dense as to produce eddies, or entirely preclude a free circulation of air, as this, like the sunlight and heat, is essential to the proper growth and development of both tree and fruit, nor yet so open as to fail of all protection. Neither should it be planted so close to the orchard trees as to unduly sap the fruit and its tree of their proper sustenance.

Hence, to avoid running upon these shoals of failure, I would choose the following varieties of forest trees: The box elder, ash, sugar maple, soft maple, chinquapin oak, and other fancied varieties of similar habits, as the linden, mulberry, black cherry, red oak, and pawpaw; and if you must, at all, plant the Lombardy poplar, cottonwood or sycamore, plant them on the outside. This belt should be interspersed and have one row on the inside with evergreens, and for this purpose I think our noble, enduring and beautiful red cedar the most profitable, cheapest, and will answer all purposes in that line. If a large orchard, would advise protection; especially young orchards should be interlined occasionally with narrow belts of red cedar, or perhaps as well with close planting of apple trees. In this matter we should be governed by the necessity of the case and the ability of the owner.

After the ground is properly prepared, if you choose to transplant your trees, do it in the proper time and moment for each variety set; and remember, you can scarcely be too careful in removing any of these trees from

their native location, or handling them in their transfer and setting, to be successful. Do not select too old trees, or from dense thickets, or of shaded growth, as these will not survive the ordeal. They should be of stocky growth, well rooted in open ground, and removed with as little mutilation or waste of root as possible, with but very little or no exposure to the sun, wind or frost while out of the ground, as it is almost solely upon these members that it depends for its survival. Cut away the top as little as will answer to give the tree proper shape and not retard its growth. This may be done too much, as well as too little, for the tree's best good. Set with as much care as you would your fruit trees, as they are to answer several purposes, or they might better be left to flourish in their native forest, and to be but little appreciated.

But perhaps one would prefer, and would better succeed, to secure and plant the seed of these trees. No doubt that after four or five years' planting, there would be but very little, if any, difference in the size or usefulness of your "belt," while you would have secured in every respect a better and more valuable stand of trees for the after-time. Besides, it is much less labor, hence cheaper, to plant your seed where you want your protection.

The seeds of all these varieties do not ripen at the same time of year, hence they should be gathered and planted when mature. Where too dense, cull and trim to taste and usefulness. In short, plant, cultivate and trim and dress your belt so as to admit of abundance of sunlight and air, but both so diffused through your orchard as to prove its benefit instead of its injury.

BUTLER COUNTY HORTICULTURAL SOCIETY.

BY E. R. POWELL, SECRETARY, AUGUSTA.

This new Society was organized January 29th, 1879, in the city of Augusta, by the unanimous election of the following officers:

President—W. H. Litson, of Benton.

Vice President—E. M. Durley, of Indianola.

Secretary—E. R. Powell, of Augusta.

Treasurer—F. C. Buck, of Augusta.

The following constitution was then adopted:

ARTICLE 1. This association shall be known as "The Butler County Horticultural Society."

ART. 2. Its object shall be to obtain and disseminate information in regard to horticulture.

ART. 3. Any person may become a member of this Society by signing the constitution, and paying twenty-five cents per annum, in advance. Ladies admitted free.

ART. 4. Its officers shall consist of a president, vice president, secretary,

and treasurer, who shall be elected by ballot at each annual meeting of the Society, and who shall hold their office for one year, or until their successors are elected. They shall perform the duties usually devolving upon such officers. There shall be standing committees of three persons each, appointed annually by the President, on the following subjects: Business; Orchards; Hedges and Forestry; Small Fruits and Vineyards; Floriculture and Ornamentation; Vegetable Gardening; Entomology.

ART. 5. The Committee on Business shall prepare matter for discussion, and other business for the action of the Society. It shall be the duty of the other committees to make examination of the special objects for which each is appointed, and report their labors at the regular meetings of the Society.

ART. 6. The annual meeting of the Society shall be held in Eldorado, on the second Tuesday in February in each year after 1879.

ART. 7. Special meetings may be called by the President and Secretary whenever they deem the interests of the Society will be advanced thereby.

ART. 8. The members present at any regular meeting shall constitute a quorum for the transaction of business.

ART. 9. By-laws may be enacted at any regular meeting.

ART. 10. This constitution may be altered or amended at any regular meeting, by a vote of two-thirds of the members present.

In accordance with the constitution, some of the committees were appointed.

It was resolved to hold the meetings at stated times in different parts of the county, especially where the Society received encouragement, and that the Committee on Business report the subjects for discussion at each meeting, and that the first meeting be held in Augusta, Thursday, February 20th, 1879, at 11 o'clock A. M. Topic for discussion: "Transplanting of Fruit Trees and Plants, Forest Trees, varieties of each suitable for our climate, and the age at which each should be transplanted."

We need every one's knowledge and experience, and thus these meetings are essential, that we may learn more of those things which insure success in this important industry. We will, from time to time, have topics upon subjects in which you are interested—practical knowledge upon orchard cultivation; the prominent errors made by beginners in grape culture; pruning grapes; what native trees and shrubs are best adapted to successful cultivation about our homes.

We feel that your presence and interest, with that of your wife and daughters, will assure us that many mistakes which may be related will call out their remedies, and so spur us on to renewed efforts. We need these gatherings for mutual encouragement, and to enable us to catch some of the inspiration of the more hopeful.

CHASE COUNTY HORTICULTURAL SOCIETY.

BY J. W. BYRAM, SECRETARY, CEDAR POINT.

CALL FOR THE ORGANIZATION.

We, the undersigned, citizens of Chase county, believing that the interests of every lover of good fruit can be advanced by an interchange of thoughts and experiences in fruit growing, have resolved to organize a County Horticultural Society, and hereby cordially invite all persons interested in fruit growing to meet with us at the Court House, in Cottonwood Falls, on Saturday, the 2d day of November, 1878, at 1 o'clock P. M., for the purpose of organizing a County Horticultural Society.

J. G. FREEBORN.	ISAAC ALEXANDER.
J. W. BYRAM.	S. M. WOOD.
PLEASANT JONES.	J. G. WINNE.
SAM. BAKER.	G. W. BRICKELL.
W. M. MOORE.	J. C. DWELLE.
H. C. VARNUM.	WM. MORRIS.
P. D. MONTGOMERY.	

Pursuant to the above call, published in the newspapers of Chase county, the friends of horticulture met at the court house in Cottonwood Falls, November 2d, 1878, and elected J. G. Freeborn chairman, and J. W. Byram secretary. A committee consisting of N. C. Varnum, J. G. Freeborn and J. W. Byram were appointed to draft a constitution and form of by-laws, and submit the same to the Society at its next regular meeting, for action.

Meeting adjourned to December 7th, 1878.

MEETING HELD DECEMBER 7, 1878.

This Society met December 7th, 1878, pursuant to adjournment.

The President being absent, on motion, Sam. Baker acted as President of the meeting.

The minutes of the previous meeting were read and approved.

The Committee on Constitution and Rules reported the following constitution and rules of order, which, on motion, was adopted:

1. This society shall be known as the Chase County Horticultural Society.
2. The object of this society shall be the acquirement and dissemination of useful information on the subject of horticulture.
3. The officers of this society shall be a president, vice president, secretary, and treasurer, who shall be elected by ballot, and continue in office for the term of one year, and until their successors are elected.
4. It shall be the duty of the president to preside at all meetings, put all questions, decide all points of order, appoint all standing committees, and discharge all other duties pertaining to said office.
5. The vice president shall preside at all meetings, in the absence of the president.
6. The secretary shall make a minute of all meetings, keep on file all correspondence and reports of standing committees, correspond with all similar societies, record the names of all the members, and draw all orders on the treasurer for money paid by the society.

7. The treasurer shall receive all money from dues and other sources, and pay the same on the order of the secretary, signed by the president.

8. The annual meetings of this society shall be held at Cottonwood Falls, on the first Saturday in January, at 1 o'clock P. M. The regular meetings shall be on the Saturday on or preceding the full moon in each month, and at such time and place as may be agreed upon by the society at the preceding meeting.

9. The president shall have power to call a special meeting at any time, by giving notice to the members through the secretary.

10. At the annual meeting of this society the following standing committees shall be appointed, each to consist of two members, who shall continue in office for the term of one year: Orchards, vineyards and hedges; small fruits, plants and flowers; entomology and meteorology.

11. These standing committees shall report at each regular meeting, or as often as may be deemed necessary.

12. Each member shall pay the sum of twenty-five cents membership fee, and any person may become a member on payment of fee and signing the roll list of this society.

RULES OF ORDER.

The following order of business shall be observed at each regular meeting of the society:

1. Reading the minutes of the preceding meeting.
2. Communications and correspondence.
3. Reports of standing committees.
4. Reports of special committees.
5. Miscellaneous business.
6. General discussion for the benefit of the society.

RULES IN SPEAKING.

The speaker shall address the chair, conform to the usual rules of debate, and yield a cheerful obedience to the decisions of the chair. He shall confine himself to the subject, and avoid all improper allusions to fellow-members, or indulgence in disrespectful language, under penalty of expulsion at the next regular meeting of the society, by a majority of the members attending the same.

On motion, Sam. Baker was elected Treasurer, and the office of Vice President was left open, to be filled at the next meeting of the Society.

Owing to the lateness of the hour, further business was omitted. The subject of the cultivation and care of the grape, begun at the last meeting, was continued for the next meeting.

On motion, the Society adjourned, to meet in Cottonwood Falls, on Saturday, December 21st, at 2 o'clock P. M.

MEETING HELD JANUARY 4, 1878.

The Society met at Cottonwood Falls on the above date, and proceeded to effect a permanent organization by electing the following list of officers for 1879:

President—H. C. Varnum, Birley post office; *Vice President*—Isaac Alexander, Cottonwood Falls; *Secretary*—J. W. Byram, Cedar Point; *Treasurer*—Samuel Baker, Bazaar.

Standing Committees—Orchards, Vineyards and Hedges, J. G. Freeborn,

Cottonwood Falls; Small Fruits, Plants and Flowers, J. W. Byram, Cedar Point; Entomology and Meteorology, H. C. Varnum, Birley post office.

Meetings are held monthly, and the members are fully alive to the important work for which they are organized.

COTTONWOOD HORTICULTURAL CLUB.

REPORTED BY J. W. BYRAM, SECRETARY.

This organization commenced its fourth year on January 4th, 1879, by the election of the following officers for 1879:

President—E. R. Wadleigh, Marion Center.

Vice President—Horace Balch, ———.

Secretary—J. W. Byram, Cedar Point.

Treasurer—Albert Balch, ———.

Standing Committees for 1879—On Orchards, Vineyards and Hedges, W. G. Hunnewell, Elk post office; on Small Fruits, Plants and Flowers, J. W. Byram, Cedar Point; on Grain Seeds and Analysis of Soil, H. Collett, Elk post office; on Entomology and Meteorology, C. E. Byram, Cedar Point.

This club has now been in active operation over three years, and the improvement in orchards, vineyards and small fruits, and better kinds of grain and seeds, within its jurisdiction, demonstrate what an amount of good such an organization can accomplish when a proper interest is taken in the work. As one result of the benefits of this organization, in a pecuniary point, I will mention, that in 1878, when this county was infested with a horde of tree swindlers, victimizing the citizens with what is now known as the "Russian Apple Swindle," not one dollar's worth of the fraudulent stock was sold within the jurisdiction of this club, while in other parts of the county, where the citizens were less informed and poorly posted, they were victimized to the extent of several thousand dollars. It is a noteworthy fact, that all the swindlers in the tree-peddling business who have tramped through this section during the past two years have studiously avoided the territory of this club, or should they ignorantly invade it, they hasten away as fast as possible to less-informed neighborhoods.

DICKINSON COUNTY HORTICULTURAL SOCIETY:

REPORTED BY J. W. ROBSON, SECRETARY, CHEEVER.

The following are the officers of this Society for 1879:

President—J. M. Shepperd, Abilene; *Secretary*—J. W. Robson, Cheever;
Treasurer—A. F. Hart, Abilene.

Meetings are held monthly.

DOUGLAS COUNTY HORTICULTURAL SOCIETY.*

OFFICERS FOR 1879.

<i>President</i>.....M. SEDGWICK, Lawrence.	<i>Secretary</i>.....J. SAVAGE, Lawrence.
<i>Vice President</i>.....J. C. VINCENT, LeCompton.	<i>Treasurer</i>.....T. M. PIERSON, Kanwaka.

MEETING HELD MARCH 16, 1878, AT THE STATE UNIVERSITY.

President called the meeting to order. The exercises opened with music. The attendance being small, owing to bad weather, the discussions were not confined to regular order.

CONDITION OF GRAPEVINES.

MISS LOLA BELL reported her Dracut Amber grape vines badly winter-killed.

H. S. SMITH said the same was true of his Dracut vines.

ENTOMOLOGY.

PRESIDENT BRACKETT, as Committee on Entomology, said the grub and leaf roller had been very annoying the past season. Much anxiety was manifested on the part of the orchardists, and anxiety in this matter means work. He had, the past winter, found the leaf roller more numerous in southern Kansas than with us. In 1873 we had them more plenty than since. This indicated the presence of a parasite preying upon their eggs, and care should be taken to preserve it. The white grub had been unusually hurtful the past season, and he advised the building of fires after dark in the fore part of May, near our strawberry beds, to allure and destroy the beetle from which the grub is produced, as they are very plentiful about that time. He further spoke of the increase of the codling moth, which was spreading from our trade centers to an alarming extent, and unless some more vigorous measures were adopted, all our fruit would be imperfect and wormy—a state of things which he considered demoralizing to all our finer sensibilities. He had found the codling moth doing more damage at Kansas City, Wyandotte, and in parts of Johnson county, than it is in our county. At Manhattan he found people were becoming anxious about this matter, and were ready to adopt means to prevent its increase. The speaker advised keeping the apple cellars and fruit rooms closed during the period of this insect changing to the moth, when they could be easily captured hovering about the windows.

J. C. VINCENT had read in the New York *Herald* a way of capturing this moth by tacking a piece of Canton flannel around the trees, then taking it off and running the cloth through a clothes wringer every few days, thereby crushing the worm of the moth.

*I hereby express my many obligations to T. D. Thacher, editor of the *Western Home Journal*, for copies of proceedings of meetings held in March, April, May, September and November; also, to Samuel Reynolds, of Lawrence, for copies of proceedings of meetings held in June, July, August, October, December and January, completing the report for 1878.—SEC'Y STATE HORTICULTURAL SOCIETY.

MR. BRACKETT approved of this method, as the instinct of the moth led it to seek such a place in which to spin up; the flannel served an excellent purpose for so doing, and it would naturally catch those worms that went up the tree as well as those that came down.

D. G. WATT had noticed some blackberry canes badly damaged by the borer.

GARDENING.

The subject of gardening was next introduced by a humorous sketch of our first parent, Adam, by MR. SEDGWICK. He thought Adam was rather green to go into the gardening business when the home market was so small, and the foreign demand so light. He presumed that George Ford sold more vegetables in one day than Adam did in a month. No man could succeed under such circumstances. Moreover, Adam paid more and better attention to "dressing" the garden than to dressing himself, whereas people now-a-days often neglect the garden and attend entirely to dressing themselves, thereby turning about the custom of our forefather. We generally consider that Adam had a soft thing in the gardening line, but the speaker thought it was not so, for Adam had to make an assignment after he had run the business awhile—a very common method among people of our own time.

MISS BELL was glad the subject of gardening was up, for she meant at least to produce her own vegetables, at Bellview, and would like to learn more of the best variety of potatoes to plant.

This introduced an animated discussion upon potato culture, in which all present seemed to take a lively interest.

D. G. WATT spoke in favor of the Early Vermont; liked it better than the Early Rose; thought the Late Rose better than the Peachblow; it sold in market better.

P. UNDERWOOD preferred the Early Vermont for its better keeping qualities. The speaker had raised the Snowball, and liked it well, if the tops would only die when their time came.

M. SEDGWICK thought the Snowball ought to be named the Snowdrop or the Snowflake, as they were so very small in size.

D. G. WATT found that the best load of potatoes he had seen in market were planted early, and he believed in early planting, as a rule. He had seen the Late Rose produce twenty bushels from one peck of seed, and they had outdone the Peachblow three to one, for him. He thought that selecting seed made a great difference in the crop; always cut away the seed end of the potato, and used two eyes from the remainder to each hill.

O. H. AYER thought the seed end could be used if divided into single eyes, and he spoke also of the Early Ohio as being a nice, large potato, and excellent for cooking.

M. SEDGWICK always selects his seed, but invariably uses his small ones, and thinks them just as good as large ones; thought the using of large seed a humbug.

D. G. WATT plants three and one-half by four feet, when rowing both

ways; otherwise he takes the step-drop, about three feet apart. Thought a mulch would increase our crop considerably. If mulch is used, cover six inches deep, and plant one foot apart, and only cover seed about an inch deep in the soil.

Another member advises planting potatoes under a mulch of old hay or straw. In this way, nice, fine, ripe Peachblows could be had by the 1st of August.

MISS BELL next inquired about early peas. The Early Gem, Goodrich and Tom Thumb were recommended; the latter seemed to have the most friends.

The report from the committee on location of meetings and subjects for discussion was next called up. C. E. Brown, being the only member present, read a list of subjects and locations for the season. The Society voted that summer culture of orchards be the subject for discussion at the next meeting, to be held at the University on the third Saturday in April. It was also voted to meet at the University grounds March 30th, for the purpose of setting out forest and ornamental trees upon the campus. A picnic dinner to be served by the ladies, and all citizens of the county invited to be present with their baskets and trees, and enjoy the day with us. The Faculty were also included in this invitation to be present, and if so disposed, each might bring along a tree to plant, and if inclined, make a nice little speech, humorous or otherwise.

The following is a list of the committees for the ensuing year, a new one being added:

On the Handling and Marketing of Fruit—D. G. Watt, chairman.

Committee on Orchards—T. M. Pierson.

Small Fruits—P. Underwood.

Vineyards—O. H. Ayer.

Entomology—N. P. Deming; advisory member, Prof. F. H. Snow.

Meteorology—J. Savage.

Floriculture—G. Y. Johnson.

Essays and Lectures—Mrs. M. Savage.

Location of Meetings—G. Y. Johnson.

Vegetable Gardening—M. Sedgwick.

MEETING HELD APRIL 20, 1878, AT THE STATE UNIVERSITY, LAWRENCE.

The President called the meeting to order, and called for the report of the Committee on

ORCHARDS.

G. Y. JOHNSON reports the bloom on his trees falling badly, and a light crop only is expected in his neighborhood.

E. PETTINGILL, of Black Jack, reports the prospect for apples in his orchard to be less than last year. The varieties that promise most are Rome

Beauty and Wine. His early apples are mostly without fruit, while the Jonathan, Missouri Pippin, Duchess of Oldenburgh and Lowell are showing a medium amount of fruit. He had on exhibition a seedling apple that has borne full for five years past, which is a long keeper, of fine flesh and flavor, and a vigorous grower, but in size, below the medium.

R. N. PEARSON, from the same place, says his Cadwallader, Maiden's Blush, Rome Beauty and Winesap all promise a good crop.

N. P. DEMING reports his peach and pear trees, also his Winesap, Ben Davis, Missouri Pippin and Pennock apple trees, all full of fruit, but it is dropping badly.

T. M. PIERSON, of Kanwaka, says his old trees are not holding their fruit well, while his younger and more vigorous trees promise a very fair crop. Among the latter class are the Winesap, Wine, Grimes's Golden, White Pippin and Early Harvest. Rawles Genet, light, till last year. Carolina Red June had been reliable till now, with him. He had raised fruit every year for the last seventeen years; thought that overbearing last year was the cause of the trees shedding their bloom this year.

N. P. DEMING had noticed that trees that made rank growth of wood shed their bloom much worse than those of a less growth.

THE PRESIDENT, being appealed to for his opinion on the cause of fruit dropping, said that opinions were about evenly divided upon this point, and rather referred the cause to lack of vitality in the tree; had noticed that alternate bearers held their fruit best.

N. P. DEMING next introduced Mr. Mastendon to the Society, who exhibited a model of a contrivance for destroying insects on trees. The subject was referred to a committee, and the following is their report upon its usefulness:

LAWRENCE, April 20, 1878.

To the Douglas County Horticultural Society: Your committee to whom was referred the so-called "worm destroyer and tree invigorator" would respectfully report that, in their opinion, the apparatus in ordinary seasons furnishes a convenient method of applying protective washes to the tree, but that the same washes may be applied more effectively and with less expense by the ordinary rag or brush.

F. H. SNOW,

J. BLOOD,

Committee.

THE SECRETARY then read a short paper upon orchard culture, in which the usual way of plowing up the soil towards the rows of orchard trees, thereby ridging them up, was discountenanced, as causing an unhealthy condition of the roots, often killing the tree outright, and producing what is known as the "root rot." The paper also spoke in favor of allowing hogs to run in the orchard, as a successful way to stir the soil and at the same time enrich it; besides, the hogs would naturally destroy many grubs and insects which seek the shelter and shade of the tree in which to hatch their young.

T. M. PIERSON said that no doubt many trees died every year in this county from being covered too deeply with earth about their roots, but he thought that what is known as the "root rot" was often caused by severe

freezing in winter. The winter of 1868 was one of those cold winters. He did not like to have hogs run in his orchard; they left the surface in bad shape by rooting it up. He had a friend in Illinois who had the bark stripped off his trees by them; besides, some trees were rubbed against so hard as to loosen the bark upon them.

Johnson, Coleman, Deming and others concurred in the same opinion.

F. SAVAGE said the talk upon the hog question was too much upon one side to suit him. He had sixty hogs in his orchard during the last three years, and had raised a good crop of both hogs and apples each year; had never had but one tree peeled by the hogs, and that one was peeled by a stray hog from Kanwaka.

Some member suggested that the difference in the hogs might be in the different breeds, while another more justly referred it to the size of Mr. Savage's corn crib.

SMALL FRUITS.

MR. UNDERWOOD, from North Lawrence, as Committee on Small Fruits, reports raspberry canes partially shaded in good condition, while those not shaded were killed. He thought the canes were often killed by too much summer pruning. His idea is to keep the canes growing vigorously during the hot weather. Both blackberries and raspberries promise a full crop the coming spring.

E. A. COLEMAN thought the canes of raspberries were summer-killed, and advocated thorough culture during the growing season to produce a healthy cane. He would mulch the blackberry, and cultivate thoroughly the raspberry.

D. G. WATT had a hundred Miami raspberry plants, well mulched, from which he sold \$35 of berries in one season. In another plat of eight hundred Doolittle plants, partially cultivated, he had sold only \$50 worth of fruit.

DR. JAMES MARVIN wanted to know how to keep raspberry canes from degenerating after three or four years' fruiting, without being at the trouble of replanting new tips.

E. A. COLEMAN thought the Doctor had set his tips too shallow; said if tips were put in eight inches deep and six feet apart, they might last nine or ten years, and yield a good return of fruit.

D. G. WATT agreed with Mr. Coleman in this opinion with the raspberry, and would treat the strawberry plant in the same way.

N. P. DEMING had noticed that Mr. DaLee cut out all his old bearing canes before the fruit was all picked from them, so that they might give all the growth to the new canes; in that way his canes were kept from degenerating ten or twelve years. The ground was kept each year well mulched with coarse manure.

T. M. PIERSON inquired how long a strawberry plant would be productive if planted two or three inches deep.

E. A. COLEMAN: Ten years, and perhaps longer.

The opinion of the PRESIDENT upon this subject being called for, he replied that it was a principle in all plant life that the nutriment which supports it is largely supplied from the surface roots, and he thought the strawberry could not be set deep without its being suicidal to the plant. Mr. DaLee had a superior soil for his raspberries, a stiff, clayey soil. He considered it much the best way to renew the plant every three or four years. In the south part of this State the grape is found to be much more free from disease and more productive when treated upon the renewal system.

ENTOMOLOGY.

COL. JAMES BLOOD was called upon to make some remarks upon the codling moth, as his residence is in the city, where the moth is at present doing more damage than in the country. He considered the codling moth one of the worst enemies to successful fruit growing we have. He had fifteen or twenty apple trees on his grounds that were now twenty years old; they had been in bearing ten or twelve years; for the last six years he ought to have had at least one hundred bushels of apples per year from these trees, worth on an average one dollar per bushel, making a neat little sum of \$600. As it has proved, the moth has been so bad that not one bushel of good, sound apples had been harvested from them, except it be a few bushels of Early Harvest. He was satisfied that this insect was spreading rapidly over the county. He did not know that any remedy could now be applied to stop its increase; he was of the opinion that some legislation should be had to protect the fruit growers of the State, if it was not already too late to do any good. He had done all he could by himself, but his neighbors had infested apples in abundance, and he had thus far found his efforts to exterminate this insect neutralized by the lack of interest felt by those nearest to him.

G. C. BRACKETT had kept a moth in a cage for ten days, but he could not tell how long it would live to commit depredations before it dies.

PROFESSOR SNOW said he had no means of telling how long the first brood of moths survived after commencing its first work in spring. He knew that their food was changed after assuming their winged shape.

COL. BLOOD said that he had found new deposits every morning through the entire season, as he had pinched off the infested apples every morning. The worm usually leaves the apple before it falls, unless there is a high wind. If the excrements seen upon the outside of an apple are dark-colored and abundant, it is a sure sign that the worm has left it. The speaker had tried pans of sweetened water and tubs of soap-suds, with a lighted lamp in the center, but had caught no moths in them, while whole quarts of silly flies, bugs and beetles had been beguiled thereby. The codling moth was too sharp to be caught napping under flannel bandages and the like very much. He thought their work was done during the night, as he seldom saw the insect during the day-time. He advised prompt action and a determined fight,

or in five years this county would have but few marketable apples in it. Either we must capture them or they will capture us.

Much more was said on this question, prolonging the discussion to a late hour before adjournment, the result of which was a motion offered by Dr. Marvin, that a committee of three be appointed by the chair, of whom President Brackett should be the chairman, to take into consideration the feasibility of some united effort to prevent the spread of this insect, and to obtain such legislation as would prevent the importation of fruit infested with injurious insects into the State. This motion was carried.

E. PETTINGILL, of Black Jack, presented, in good condition, specimen apples of the Wagener, McAfee's Nonsuch, and Pettingill's Seedling.

E. A. COLEMAN put on exhibition samples of the Kansas Keeper, Ben Davis and Rawles Genet, all in excellent condition.

It was voted that the subject for discussion at the next meeting be small fruits, including cherries, and how to market them.

MRS. G. C. BRACKETT and MRS. J. SAVAGE presented some fine bouquets of spring flowers.

On motion of G. Y. JOHNSON, the musicians present received a hearty vote of thanks, and were invited to be present at future meetings.

Adjourned, to meet at W. C. McClintock's, a mile south of poor-farm, the third Saturday in May.

MEETING HELD MAY 18, 1878, AT THE RESIDENCE OF W. C. MCCLINTOCK, FIVE MILES SOUTH OF LAWRENCE.

Mr. McClintock is one of those thoughtful and practical farmers who combine household conveniences with thorough and systematic farming, his elegant and spacious house being a model of domestic convenience, arranged throughout, while his timothy and clover meadows and his fine fields of waving wheat delight the eye and contribute to the real wealth of the country. The beauty of the place must be seen to be appreciated. The day was lovely, warm, and breezy—in fact all that could be desired, and the attendance quite large.

The President and Vice President being absent, the meeting was called to order at the usual hour by the Secretary, and, on motion of Mr. Deming, Mr. Vincent was elected President *pro tem*.

E. A. COLEMAN wished to have a correction made, for the credit and good name of Kanwaka. In the discussion on hog culture, at the last meeting, Mr. Forrest Savage stated that his trees had never been injured except by one hog, and that was a stray from Kanwaka; but afterward, in a private conversation with Mr. Coleman, he recanted said allegation, stating that the stray came from some other direction. Mr. Coleman was very tenacious of the good name of Kanwaka, and did not want his township "hogmatized."

The correction was made.

ORCHARDS.

T. M. PIERSON, chairman of the Committee on Orchards, reported a greatly diminished prospect for apples. Since the last meeting of the Society a large quantity of the young fruit had dropped off. However, several of the early varieties are still well loaded; among these are the Red Astrachan, Maiden's Blush and Lowell. The winter apples will be almost a total failure. A variety called the "Alexander," cultivated by Mr. Messenger, is, however, an exception to the rule, as it is loaded down with fruit. This variety bears full every year. Twig-blight is manifesting itself in several orchards in his neighborhood. He says that many of the large orchards in the county are fast passing away, and recommends the planting of new ones.

MR. GILSON thinks his crop of peaches will be a very full one, but his apple crop will be very light. His apple orchard is suffering greatly from the depredations of the round-headed borer. He will have no pears, as they have all dropped off. He has not discovered any twig-blight.

MR. LOTHROP, who lives some nine miles south of Lawrence, says that nearly all the apple trees in his neighborhood are injured by the borer; many of them past recovery.

E. A. COLEMAN stated that Mr. Bigsby's orchard was suffering very much from twig-blight, as nearly all the early varieties were blighted.

D. G. WATT said that his Rawles Genet, though somewhat blighted, were bearing as full as they were last year, as also were his Lowell and Maiden's Blush. It was also stated that Mr. Draper, of Kanwaka, would have more apples this year than last.

From the above reports it may be inferred that there will be apples enough raised in this county for home use, and probably some for shipping.

DR. LEARY was called upon. He said he did not wish to make any humiliating confession. He had been trying to make a living by selling corn at twenty-five cents that cost him thirty cents per bushel to raise, and by selling hogs at two dollars and fifty cents that cost him three dollars per hundred. He thought the fruit business quite precarious, but was not competent to give an opinion; saw several reporters there writing away, but hoped they would not report him.

SMALL FRUITS.

It was here moved that the subject of orchards be dropped, and the special order for the meeting be taken up, which was "Small Fruits and Cherries, and how to market them."

A long discussion followed, on this subject, in which Messrs. Watt, Coleman, Vincent, Ayer, and other fruit-growers, participated. As Mr. Watt seemed to obtain the best price for his fruit, his opinions and advice were sought with much interest. After going over the whole routine of picking and grading, sorting and packing, dressing-up and marketing, the gist of the whole thing is this: Pick your fruit in just the right stage of ripeness; leave

the stems on cherries and strawberries; keep your grades of fruit separate; sell nothing but good, sound fruit, dressed up in the most attractive style; fill your boxes quite full; then demand a fair, remunerative price for it, and if you cannot get it in Lawrence, ship to other points.

RASPBERRIES.

The best mode of cultivating the raspberry was then discussed. Mr. Coleman said the canes should be pinched back to about three feet, and every lateral also pinched back to about eighteen inches, and the old wood removed as soon as the fruit was gathered, to which Mrs. Bell and son and others agreed. The varieties recommended for propagation were the Doolittle, Miami, Iron Clad and Golden Cap.

The Russian apple-tree peddlers were then overhauled, and some of their trickery exposed. The peddlers claim that the borers will not work in the Russian apple tree. Our horticulturists aver that the test has never been made here. But if their claim should be true, which is not believed for a moment, the trees would be worthless, as all northern apple trees have proved to be in Kansas.

ENTOMOLOGY.

N. P. DEMING exhibited a codling moth, and a beetle from which the round-headed borer comes. Of the two enemies, he considered the codling moth the greater, as we can by intelligent perseverance control the latter, while the former evades all our efforts to entrap him. The codling moth hatches out two broods in one season. The miller goes from apple to apple, depositing its eggs. He thinks the evil was brought upon us solely by the importation of wormy apples from Michigan and other States. The round-head beetle comes out of the tree about the first of June, and then commences the work of perforating the bark just above the roots of the tree, depositing an egg in each perforation, and continues this operation until about the middle of September, after which time every orchardist should go to work and destroy every borer, not leaving one to perpetuate his kind.

JOSEPH SAVAGE feels much encouraged, and believes he can rid his orchard of these pests; thinks Mr. Ridenour's practice of washing his trees with lye about every two weeks is a good plan for those having but a few trees, but involving too much labor for those having large orchards.

E. A. COLEMAN claims that his method is a certain preventive. It is tarred paper tied round the trunk of the tree, after carefully taking out all of the borers. He claims that the beetle will not approach the tarred paper.

GEOLOGY.

On his way to the meeting, JOSEPH SAVAGE found a fine specimen of fossilized palmetto wood. This furnished the text for a neat little lecture on geology, which your reporter has not time to reproduce in this sketch.

After a vote of thanks to the host and hostess for their generous hospitality, the meeting adjourned.

It was voted to hold the next meeting at Mr. T. M. Pierson's, Kanwaka.

MEETING HELD JUNE 15, 1878, AT THE RESIDENCE OF THOMAS M. PIERSON, KANWAKA.

Mr. Pierson is one of the oldest settlers of Kansas, having made a prospecting visit here in the summer of 1854, before the Indian titles to these lands was extinct. He was so well pleased with the prospect, that in the following spring he returned with his family, to remain a permanent settler of the new Territory. He also has the credit of growing the first apples in Kansas. He brought with him a quantity of three-year-old apple trees, which, on his arrival, he "heeled in," in the timber on the Wakarusa. Out of the 500 trees, only nine escaped destruction by the rabbits the following winter. These nine trees were planted on newly-broken prairie in 1856, and in six years afterward, being 1862, Mr. Pierson gathered his first crop of Kansas-grown apples. One of the nine pioneer trees is still living and bearing; all the rest have succumbed. For quantity and quality he has one of the finest orchards in this county. It would do our careless orchardists good to take a look through his trees, and witness the good results from the intelligent industry given to this large orchard. Mr. Pierson will evidently gather several hundred bushels the present season.

DINNER.

Soon after noon, dinner was served in the beautiful grove adjoining the orchards. It was gotten up by the deft hands of the ladies, who constituted a considerable portion of the attendance, and was served in true picnic style. Fruit, with and without its adjuncts of pastry, etc., was prominent among the viands, as it should be at a fruit-growers' picnic dinner. The spread tables were beautiful, and the "inner man" was amply gratified and satisfied.

Dinner being over, the President, G. C. Brackett, called the meeting to order. As the Secretary was absent, Mr. G. Y. Johnson, on motion, was made Secretary *pro tem*.

ORCHARDS.

The chairman of the Committee on Orchards, MR. PIERSON, reported them in good growing condition; crop, light; apples scabbed somewhat, but not as much as last year.

A. MESSINGER found borers in all his trees—found young ones just hatched; inquired what time the borer begins to hatch out.

E. A. COLEMAN: Usually begins to hatch out in the middle of June, but this year being earlier than usual, the hatching began by the 1st of June.

M. SEDGWICK stated that his trees were wrapped, and inquired when the wrappers should be taken off; was advised to take them off as soon as possible. His crop of apples is very light; has no early apples in his orchard.

E. A. COLEMAN thinks we have been underestimating the quantity of apples in the county, and that there will be a much larger yield than heretofore expected. Thought, at first, his orchard would not yield five bushels; now estimates the number of bushels at 100.

MR. PIERSON estimates his crop at one-fourth that of last year.

MR. MESSINGER's Alexander is bearing full.

MR. WINTER has a good showing of both summer and winter fruit.

J. C. VINCENT stated that some of his neighbors have trees so loaded with fruit that they require propping.

DR. LEWIS, of Lecompton, reported the orchards in that part of the county in fine condition. The Ben Davis is bearing more than any other variety. He believes the crop will yield much better than was generally anticipated.

MR. BENTLEY inquired, "What is twig blight?"

G. C. BRACKETT replied that the question had never been satisfactorily answered. By some it was thought to be the effects of the work of a very minute insect upon the foliage. Prof. Riley, of St. Louis, had placed the blighted foliage under powerful microscopic examination, but could not detect the presence of any insect. Others thought the blight was caused by electricity, and still others, that it was climatic. This last opinion, Mr. Brackett seemed to favor.

DR. LEWIS thought that the character of the soil and location of the orchard had both an influence in inducing or preventing blight; considered brush or timber land the best, and an eastern slope the most desirable. He cited a case where the brush was cleared away, on an eastern slope near Lecompton, and an orchard of five hundred trees planted, not one of which has ever blighted, except a Kansas Keeper, and the trees have always borne well.

CAPTAIN O. BARBER said that the trees in his orchard that bore well last year had but little fruit this year, while those that failed to bear last year were now well filled; that branches that bore shyly last year were now full, and *vice versa*. He thought it was the habit of most trees to bear full only on alternate years.

E. A. COLEMAN claims this to be the rule, but makes an exception of the Kansas Keeper and a few other varieties. His Kansas Keeper bore full fifteen out of sixteen years. He called attention to the pear; thought it was too good a fruit to be ignored; also to the successful management of the plum. He has one hundred pear trees in good condition and entirely free from blight, and bearing well. The curculio he formerly shook from his trees, but has abandoned that plan as being insufficient, and now smokes his plum trees, when the fruit is about as large as the end of his thumb, with the fumes from coal tar, and repeats the process three or four times during the season, and considers it a sure preventive against the work of this insect; advises others to go to work and raise this most delicious fruit, and treat the curculio in the same manner.

O. H. AYER reports his pear trees bearing well, entirely free from blight; plums are badly stung by the curculio.

G. C. BRACKETT's pear orchard is not suffering from blight or any other disease. He believes in smoking; does not favor the shaking process. Thinks it a great mistake to use plums on peach stocks; believes that both the pear and the plum will eventually be successfully produced here.

E. A. COLEMAN's favorite plums are the Lombard and Magnum Bonum. He recommends grafting on the wild-plum stock, below ground; if above ground the graft will outgrow the stock. Could be budded in the root if so wished. The main thing is to mature the bud by pinching off the terminal of the growing limb.

SMALL FRUITS.

The chairman of this committee not being present, MR. AYER stated that so far the marketing of small fruits had been satisfactory, and the prospect for the remainder was good.

DR. LEWIS stated that in Lecompton township the strawberry crop had been light, the raspberry crop was good, and the blackberry crop would be heavy. Fruit from that township is shipped to Topeka.

GRAPES.

MR. AYER reported a good prospect for the grape crop.

MR. COLEMAN corroborated.

MR. DOUGLAS reported his vines in good condition; no signs of rot and not much thinning-out in the bunches.

MR. COLEMAN said it was better to plow up the vineyard than to sell the fruit at two cents per pound.

MISS LOLA BELL did not lose ten pounds of grapes last year by rot. The vineyard was on dry land, with a southern slope, and was well cultivated through the early part of the season.

M. SEDGWICK advocated deep planting of the vine; thought it would last much longer than when planted near the surface.

MR. COLEMAN and MR. AYER combatted this idea, claiming that the roots should never be covered more than four or five inches; that if planted deeper the roots would die out.

MR. SEDGWICK's reply was: "But when he saw that they were unlearned and ignorant men, he sat down and said nothing to them."

Whereupon MR. COLEMAN cited a case: Some years ago Capt. Bickerton set out a vineyard. He dug the holes four feet square and three feet deep, planted a vine in each hole, and the result has been, he has never picked grapes enough to "*clean his teeth*."

ENTOMOLOGY.

E. A. COLEMAN called attention to the raspberry borer, stating that he had lost 1,000 canes by this new pest.

G. C. BRACKETT reported the borer in his canes; describes it as resem-

bling the peach-tree borer in its perfect state, and looks something like the blue wasp.

T. M. PIERSON stated that the codling moth was becoming quite numerous in his orchard, and that he had almost entirely eradicated the crown borer.

THE PRESIDENT stated that the committee appointed at the April meeting, consisting of Dr. Marvin, Prof. Snow and G. Y. Johnson, for the purpose of obtaining some statutory enactment to prevent the further introduction of wormy fruit into the State, were not ready to report, but he expected a report at the next meeting.

MR. BRACKETT said it was almost useless for one man to eradicate the pestiferous insects while his neighbors' orchards were breeding-dens, whose insects were swarming in upon him. Every man should work for the common good.

J. C. VINCENT inquired if boring into the plum tree and filling up the hole with sulphur would keep off the curculio.

MR. BRACKETT had no faith in such treatment. There is no disposition in the tree to retain anything foreign to its composition; tree-sap is only water, and sulphur cannot be dissolved in water. Scientific experiments have been made to detect the presence of Paris green in plant composition when sown upon the potato plant for the purpose of destroying the potato bug, and no trace of the poison, by the most searching analysis, could be found either in the plant or in the tuber.

MRS. RICKER thought the sulphur treatment of the plum tree would keep off the curculio; that although the sulphur would not dissolve in the sap, there was an element in the sulphur which the sap appropriated, and which proved sufficiently offensive to the insect. Her uncle had plum trees which he treated in this manner, and it proved successful.

After a vote of thanks to Mr. and Mrs. Pierson and family, the meeting adjourned, to meet on the third Saturday of July, at the residence of G. C. Brackett. Special subject for discussion, Vineyards.

MEETING HELD JULY 20, 1878, AT THE RESIDENCE OF G. C. BRACKETT.

A short session was held before dinner.

G. Y. Johnson, Secretary *pro tem.* of the last meeting, read the minutes of the same.

Several corrections were made to the minutes by Mr. Coleman, who was reported as saying that the Winesap apple trees were full of fruit, which he didn't say; also, he was wrongly reported as saying that the raspberry borer was introduced with the Turner raspberry, whereas this raspberry has been in Kansas but two years, while the borer has been at work at least five years.

JUDGE WELLHOUSE, of Leavenworth, was present, and took a lively interest in the meeting; also, Messrs. Pettingill and Pearson, from Black Jack, as well as quite a number of new members from the neighborhood of the last

meeting—at Mr. McClintock's. Quite a delegation was also present from the Hesper neighborhood.

ORCHARDS.

THOMAS PIERSON, Committee on Orchards, reported them in good condition. The scab, which was abundant in the early part of the season, was disappearing, and the appearance of fruit was improving. Orchards as a general thing were pretty well cultivated. He was sorry to see some new cases of blight coming on again.

JUDGE WELHOUSE reported a short crop of apples at Leavenworth, but a full crop of peaches. Wild Goose plums promised an enormous crop; one orchard of fifty trees would yield from two to three hundred bushels. Pears and pear orchards were doing well at Leavenworth. Small fruits had done very well, also, this season, though the warm weather was injuring the crop of blackberries. The Judge thought that their city consumed about all the fruit raised in their vicinity, and but little if any was shipped away.

O. H. AYER reported apple trees as making a nice growth, and generally in good condition, in his neighborhood.

N. P. DEMING had planted some of his trees sixteen feet apart; found they were crowding each other; and should thin out soon, though he still believed that in order to get good trees, standing erect, it was necessary to plant close for a wind-break; could not get straight trees without.

T. M. PIERSON advised wide planting; believed that standing trees would be injured by thinning out those near that had shaded them previously.

D. G. WATT had some blight in his orchard, a part of which was in clover and part still in weeds; thought pears did better not to cultivate the ground, as it checked their growth and made them less liable to blight.

MR. COLEMAN agreed with Mr. Watt on this point. Had seeded down to orchard grass.

T. M. PIERSON thought clover was better for orchards, and advised all to seed down to clover after cultivation ceased.

E. PETTINGILL thought pears made the best showing in a blue-grass sod, and that his friend Pierson had pear trees loaded with fruit, which grew about the house where no grass was, and the ground tramped hard. Reports a small crop of apples in his neighborhood, and mentions several varieties as bearing, among which were the Ben Davis and Willow Twig.

PRESIDENT BRACKETT then made a few remarks upon the Russian apple trees, which are being sold the present season, in all parts of our State. He thought it probable that the venders of these trees would carry out of Kansas at least \$30,000 or \$40,000. They had been to see him, and were quite persistent in their efforts to sell him some of their trees. He told them he had all the trees on *trial* he could afford. He said their pictures were fine specimens of art, and did not wonder that men of gray hairs were sometimes persuaded to buy some of their trees. These sellers of Russian hybrid apple trees claim to represent a nursery of 500 acres, located at Rochester, N. Y.,

owned by Jones & Palmer. He had taken the pains to write to P. Barry, of Rochester, for information on this point. Mr. Barry wrote back that at present there was no such firm in Rochester, though some years ago there was; but it had failed, and one of the firm (Mr. Jones) had died a year or so ago, leaving a son, who was running a small nursery of young trees. He made these remarks to show that the professional tree peddler would resort to almost any dodge for money. Out of the many Russian apples submitted for trial in this country, we had a few good ones. These are the Alexander, Tetofsky, Red Astrachan, and Duchess of Oldenburgh—all tart, sour apples.

VINEYARDS—O. AYER, COMMITTEE.

Concord grapes had rotted badly, and dropped. The Ives had not rotted at all. The Catawba had rotted but little. The rotting season seems to be about over since the warm weather set in.

GARDENING—M. SEDGWICK, COMMITTEE.

I think it a good plan to plant most of the "garden truck" in drills, so as to work as much as possible with a horse. Gardens should not all be built on the same plan or style. Country or farm gardens should be made long and slim, so as to work easily by horse power, while the town or city garden should be made more compact, as they are usually worked by negro power. I have had some experience in cultivating a garden. Some years, when I have been short-handed for help in the fields, and work has been crowding, I have tried mowing my garden; but this is not a practical way, and I would not recommend it. I was somewhat amused the other day, while working near the house, setting out sweet-potato plants, by my wife calling and asking me if I was going to set out the parlor stove this year. She thought it was time I was about it. I told her I considered it rather early in the season to set out stoves. But she replied that the season was early, and it was time it was out. Now, her object in having the stove set out was this: she had sewed a carpet this spring, and she wanted the carpet to come up. She said the carpet would not come up (to place) until the stove was set out; so I set out the stove, and sure enough the carpet was up in less than two hours. He then exhibited some fine samples of Early Rose potatoes, some Brownell's Beauty, and some Compton's Surprise.

SMALL POTATOES FOR SEED.

MR. SEDGWICK exhibited some samples of Early Rose potatoes raised from small seed, which he defied any one to beat.

MR. COLEMAN fell in with the idea of small seed, and argued that the potato was a tuber and not a seed, and all tubers were best when propagated from small, unripe samples.

JUDGE WELLHOUSE also gave quite a history of his own trials and experiences in the same line, and came to the conclusion that the small seed was

just as good as the large, although he had never had the hardihood to say so before.

D. G. WATT and H. MANWARING thought differently, arguing that large potatoes should be cut in pieces, making eight or ten hills out of one potato.

Several members concurred in a new idea to the Society, viz.: The seed potato, when planted whole, is benefited and made more sure of growing by clipping off the end opposite to the seed end with a knife. They say it starts quicker, and is therefore less liable to rot.

H. MANWARING exhibited some samples of the Early Ohio potatoes, which were very large, and which he claimed were ten days earlier than the Rose. He also presented some beans which were new and very prolific. One pole would supply an ordinary family with "snap beans" all summer. The pods were very large, but would match the assertion, which seemed to be a big one.

The next question discussed was that of

HANDLING AND SHIPPING FRUIT—D. G. WATT, COMMITTEE.

MR. WATT had shipped most of his fruit west. His strawberries had gone through all right, and so had his raspberries, and yielded him a fair return. Cherries had also borne transportation well; but the blackberries had proved too much for him, had soured on him; the weather had been too wet for them; but still could ship to points this side of Denver with safety. He is sending his apples to Denver, and is doing better with them than to sell at Lawrence prices. Advises putting up fruit in the best possible shape, and all number one. Packs in crates made of lath. Too much pains cannot be taken in packing. Had been shipping by express; should soon send by freight, as the weather became cooler. We are now shipping from Lawrence from 2,500 to 5,000 pounds of fruit daily, by express—an average of 3,500 pounds daily; mostly peaches, with some apples and a few blackberries. This fruit mostly goes over the Kansas Pacific Railway. Atchison is shipping some over the Atchison, Topeka & Santa Fé Railroad, with some additions at Burlingame to the amount.

N. P. DEMING made remarks at some length upon the codling moth, showing flannel bandages which he had tied around trees for the purpose of trapping them. The bandage showed several cocoons, and was thought the best thing known for capturing this insect. He exhibited a living moth and a beetle from the round-headed apple-tree borer.

After a hearty vote of thanks to Mr. and Mrs. Brackett for their hospitality, the Society adjourned.

MEETING HELD AUG. 17, 1878, AT THE RESIDENCE OF G. Y. JOHNSON.

The President called the meeting to order, soon after dinner was disposed of.

ORCHARDS.

The first subject considered was that of orchards.

MR. SEDGWICK said he had, since our last meeting, removed the hay and straw wrappings from his trees, and found, as predicted, quite a large number of borers deposited near the top of the bands, and not under them, as predicted by some of the members. This condition of things went to prove to his mind that when the borer was driven from its favorite locality for laying its eggs, it would take the next-best place, showing that coal tar and bands of tarred paper were a grand fizzle.

PRESIDENT BRACKETT confirmed the opinion first stated by Mr. Sedgwick.

H. G. SMITH, of North Lawrence, said he had trees planted thirteen years ago, in sandy soil, which never had borers in them, and he desired to know if the sand had any influence in the result. In reply it was stated that sandy soil was noted for being free from the borer. One member had heard it suggested that the sand and grit were too much for its teeth.

PRESIDENT BRACKETT replied to this latter idea, that the borer had no teeth for such work. It punctures the bark of the tree with its ovipositor and lays the egg within the bark, near the wood.

MR. SEDGWICK said he used pieces of rotten wood among his trees, which would soon become filled with ants, and the ants would destroy both the borer and its eggs.

O. H. AYER said the codling moth was still at work on the apple.

FITCH REED wanted to know if the rough, scaly-barked trees were benefited by scraping off the outer scales, and making them smooth.

M. SEDGWICK thought the smoother the bark, and the freer from grass and weeds the tree was, the safer and better it was.

O. H. AYER concurred in this opinion.

MR. BRACKETT also concurred in this opinion, and said the older and thicker the bark, the less likely the tree was to be attacked.

THE SECRETARY also joined in this opinion.

SMALL FRUITS.

Small fruits were next considered.

P. UNDERWOOD, chairman, said that the canes of the raspberry had made an excellent growth, but the vines had fallen badly, and advised a closer cutting back when this berry was close planted. The crops of fruit had been good of both the raspberry and blackberry, and the season of fruiting of both had been prolonged to a much later period than usual: at least a month of good picking had been realized of both berries. He had left quite a crop of raspberries to rot on the vines, on account of no market

and excessive rains. The Burns Seedling raspberry had proved too small for a good market berry. The Smith he considered of less value than the Miami. The latter he thought the best berry to raise.

D. G. WATT asked for the status of the Seneca.

MR. UNDERWOOD said it was sent out for a late berry, but it had not proved to be any later than the Miami, and not as good a berry. The Doolittle had done well; the berries were large and fine. Information was called for upon the Charles Downing strawberry.

DR. SEAVY said he had a small patch that was satisfactory in every way. Liked it much better for family use than the Wilson. Thought the vines were not quite as vigorous as the Wilson.

MR. REED had set out 1,000 plants of the Downing since the fruit was gathered, which were doing well, and which promised to give him a full crop next year.

N. P. DEMING had found a small black bug inhabiting the inside of the plum. They were so plentiful that people were afraid to can the fruit. He hoped to learn its species by further observation, and would report results at another time.

MISCELLANEOUS DISCUSSION.

PRESIDENT BRACKETT exhibited two plates of Seckel pears. One plate was grown on limestone soil, and were much larger than the others, which were grown on black loam; hence he concluded that the former was better adapted to fruit growing than the latter.

O. AYER, chairman of the Committee on Vineyards, reported a vigorous growth of wood during the first part of the season, owing to the frequent rains, during which time the rot raged, but as soon as the dry weather came on the rotting ceased; hence he concluded that the grape rot was not a disease of the vine, but was caused by the hot steam and moisture evaporating from the soil.

MR. SMITH asked if summer pruning would not mitigate this rotting.

MR. AYER said it would not, as far as he tried it. So said others.

MR. SMITH had one-third of his grapes rot on a deep sandy soil, and MR. UNDERWOOD had noticed the same round black spot begin on the apple as on the grape before dry rot commenced; hence he concluded that both arose from the same cause.

MR. AYER presented a large seedling peach of excellent quality, which the Society, by vote, named the Ayer's White.

MR. SMITH, of North Lawrence, had a Transcendent crab tree, fifteen years old, that had never borne fruit. He wanted to know if he had better cut it down, or wait longer in expectation of fruit.

E. PETTINGILL said his neighbor Pearson had a tree that bore full, and G. Y. JOHNSON said Mr. Keese had a good crop. Other members had also more or less fruit.

N. P. DEMING reported that his hogs had destroyed all the morning glories

in his orchard, and they were getting the upper hand of him, as they had peeled a few of his trees. He wanted to know if August was too late to peel trees in order to force them into bearing. It was thought by several members not too late.

HANDLING FRUITS.

Mr. Watt, as Committee on Handling Fruit, exhibited a model for a rotary dryer, which he claimed contained many excellences. He contemplates building a fruit dryer on this principle, of brick, and he was requested to report more fully at the next meeting upon this important subject. Quite a discussion sprang up in regard to canning and drying, the ripeness of the fruit, and the cost and best method of preparing fruit for drying and canning. For sun-drying peaches, the time is shortened about one-half by first baking the fruit in a stove oven; for so doing, the fruit is all placed with the hollow side uppermost, both in the stove and the sun.

MISCELLANEOUS DISCUSSION.

Under the head of miscellaneous business, quite a discussion sprang up concerning making an exhibit on the fair grounds at the coming fair—exceptions being taken to the action of the directors in selling the right to vend beer upon the grounds during the fair. After an animated and lengthy discussion of the subject, it was unanimously voted to exhibit fruits, under the following protest:

Whereas, We are credibly informed that the Kaw Valley Fair Association has sold the privilege of vending beer upon the grounds of the Association during the coming fair; and *whereas*, we hold such practice to be prejudicial to good morals and discreditable to the Association, an insult to the temperance sentiment of the community and the attendant celebration, and a curse to society: therefore, be it

Resolved, That we, the members of the Douglas County Horticultural Society, do hereby unanimously protest against such action of the directors of the Association.

Resolved, That should it be hereafter repeated, we as a Society will withhold our support from the Association.

FITCH REED,
H. T. SMITH,
GEO. LEARY,
J. SAVAGE,
Committee.

During the discussion of this protest, the hope was generally expressed that the directors of the fair would reconsider their action, and if possible revoke the license.

After a hearty vote of thanks to Mr. and Mrs. George Y. Johnson for their generous hospitality, the meeting adjourned, to meet at the residence of Mr. Newton Henshaw, near Hesper, upon the third Saturday in September.

MEETING HELD SEPTEMBER 26, 1878, AT THE RESIDENCE OF NEWTON HENSHAW, NEAR HESPER.

The President, G. C. BRACKETT, called the meeting to order, and opened the exercises with discussion upon the subject of orchard culture.

ORCHARD CULTURE.

N. P. DEMING opened the ball, by saying that apple trees were making a remarkable growth of wood this year, which he considered the cause of our lack of fruit. Looked for a heavy crop the coming year; thinks it will pay to take good care of our trees. Did not see many trees on the way to this place. Found the codling moth and round-headed borer his greatest enemies. Fought the former with cotton-flannel bandages bound around the tree just below the forks, and the latter with cold steel. Many people erred by digging for the borer too early in the season, before the eggs had hatched out, and recommended September or the first part of October as the best time to hunt and exterminate it. He advised hoeing away the soil around the crown of the tree, and leaving it thus, until a thorough review of the entire work could be had two or three weeks after the first hunt.

MR. WILBUR, of Hesper, had one hundred trees in bearing. Had taken hold of the borer question in earnest the present year. In one tree he had taken out as high as ten, fifty-five in one row, and eighty-eight in two rows of trees.

MR. WOODARD, of Hesper, desired to know if borers were as thick and injurious twenty years ago as they are now; did not hear anything said about them then.

SAMUEL REYNOLDS replied that not until the last eight or ten years had he been troubled with them. Had his borers all dug out at present. Some of his trees last year bore a full wagon-load of apples each; had but few apples this year. Winesap trees had blighted badly during the early part of this season, but had now entirely recovered from it, and were doing finely; did not consider the blight a serious damage.

G. C. BRACKETT: Borers were known forty years ago.

FITCH REED had neglected his trees until last year, when he noticed sprouts coming up around several of them. These trees he found to be infested by the borer. Now he looks his trees all over every few days, and has them all clear of the borer, and intends keeping them in that condition.

MR. THOMAS, of Hesper, rose to inquire how to cultivate an orchard—whether level culture or hilling-up was the best.

N. P. DEMING, in reply, said he believed a good many trees were killed by too much hilling-up. The swaying of the tree by the wind would cause an opening around it; this would fill with water, and soon transform the soil into a sort of paste or mortar, which would sun bake nearly as hard as a brick.

MR. WILBUR did not believe in hilling up a tree; he had set out fourteen hundred trees, and had lost but few; did not dig a big hole when he set his trees.

SAMUEL REYNOLDS prepared his land for setting his orchard by plowing it into as many lands as he desired rows of trees, leaving the dead-furrow in the middle, thus giving the orchard proper drainage.

THE SECRETARY also believed in the level-culture method, as giving the best and firmest-set trees, where whole rows stand up as straight and erect as a platoon of soldiers.

THE PRESIDENT remarked that the opposite culture, with proper care, often gave the same result.

MR. HENSHAW wanted to know if any member had used Fisher's patent wash for trees.

MR. BUTLER had bought and tried it; found it made a better color on the bark of his trees, but did not believe it would do all it claimed to do. He had used the wash upon his peach trees, with good effect. The day after the wash was applied, the borers had left their little cozy retreats under the bark, and had voluntarily surrendered themselves and come out into the broad sunlight and died—died in open daylight, around the roots of his trees.

N. P. DEMING thought that all invigorating washes were injurious, as our soil would encourage all and more growth than was healthy for the tree, making more wood and less fruit.

G. Y. JOHNSON made some humorous remarks upon agents and their patent washes. He said the base of all the washes was the same (lye), put up with different flavoring extracts, but so far as he had met the agents, *lie* constituted their chief stock in trade. There is little doubt but if the wash of lye or soft soap diluted is repeated often—say once in two weeks—it would obviate the necessity of digging borers at all.

N. HENSHAW said he had some Yellow Bellflower trees ten years old, that had never borne any fruit; and he would like to know if borers or something else would make them fruitful.

MR. BUTLER wanted to lend Mr. Henshaw some borers, and his wash also, if he desired it for his trees, as he wanted to be neighborly in horticultural matters.

G. Y. JOHNSON said he thought the Yellow Bellflower was choice in its location. A bluffy soil seemed to suit best, where it would run to fruiting freely; while upon deep black loam it will remain barren. It is to be noted here that in our market, the present year, as well as last year, the Yellow Bellflower almost, if not quite, takes the lead in abundance, while as to quality it takes its place as one of the very best. Its reputation as a poor bearer is fast reversing.

SMALL FRUITS.

MR. WILBUR wanted to know if strawberries could be grown in Kansas.

PRESIDENT BRACKETT replied that they could be. The process of raising them was simple. Set out the plants in the fall or early spring, in rows of three feet apart, and cut off the runners. Mulch in winter with old hay. Deep mulch, if taken off early in season, was not hurtful to the plant. July was a bad month in which to set plants, on account of the immaturity of the new plant at that time—especially so if it was thrown out from a fruiting stool.

ENTOMOLOGY.

N. P. DEMING, chairman of this committee, reviewed the borer and codling-moth question at some length, and presented eggs of the praying mantis, one of our friends, and also the larvæ of the handmaid moth; which has been present in unusual numbers the present season.

VINEYARDS.

Grapes were reported as dropping badly in almost all vineyards. MRS. WM. BELL's vineyard had not suffered from rot until this season, when the east side of her vineyard had been afflicted with the rot much more than the balance. She thought it was owing to its being too much cultivated and too moist for the health of the fruit.

METEOROLOGY.

THE SECRETARY reported that he had observed a pretty sure sign of rain after a "dry spell." It was the presence of a fog during the early part of the day along our bottom lands, showing that certain barometric conditions were necessary in the atmosphere before a shower could be precipitated; and further, the quantity of rain can be predicted by the length of time the fog appears. Another rain sign was given, though not especially applicable to a dry time. It was the swift floating of small, scudding or apron clouds, low down, floating over a background of cloudy sky, slow-moving and quiet. Mr. Butler's sure sign of rain was, cloudy all around and pouring down in the middle. Mr. Thomas's was, when he cut his clover and timothy. Mr. Deming's was, when he took his wife on a visit to Twin Mound.

MISS LOLA BELL and the Hesper choir furnished the Society some excellent music. The picnic dinner was served in good style, and enjoyed by all. The Society passed the usual vote of thanks to Mr. and Mrs. Henshaw for their kind hospitalities, and agreed to return at least once each year to Hesper if its citizens would keep up their interest in its proceedings.

MEETING HELD OCTOBER 19, 1878, AT THE RESIDENCE OF JOS. SAVAGE.

At the usual hour the President called the meeting to order. The Secretary read the minutes of the last meeting.

ORCHARDS.

This subject was then called up, and discussed at much length.

JAS. KANE was called on, and said that the orchards in the section where he resided were very thrifty, but not producing much fruit. The Willow Twig and Golden Russet were the only varieties bearing full. He considers the Golden Russet much better for cooking than for dessert purposes.

N. P. DEMING stated that Mr. Rose, on the Kansas river bottom, had six Ben Davis trees, on sandy soil, that yielded fifty bushels of good fruit. Thinks sandy soil preferable for nearly all varieties.

WM. YATES had just as good fruit on similar soil and location.

E. A. COLEMAN: Bottom lands are rather more unsafe, on account of late frosts.

H. S. FILLMORE: The orchards of Wm. Hughes and Paschal Carter, on the river bottom, bear well every year.

G. Y. JOHNSON: Those orchards are near low places, or swales, which draw off the frosts from the trees, thereby protecting the blossoms.

JOS. SAVAGE thinks that the lack of borers on sandy soil is due, in a measure, to the contiguity of timber and the operations of the woodpecker.

D. G. WATT found fine apples in an orchard belonging to Mr. Boucher, in Anderson county. This orchard was well protected with forest trees.

PROF. CARRUTH presented a subject having a scientific as well as a practical bearing—Will the blossoms of the same plant or tree fertilize each other? He thinks not; thinks the fertilization or fecundating process must take place between blossoms of different plants. This theory accounts for the cause of unfruitfulness in isolated trees. The Professor gave several examples to prove the correctness of this position. He wished the Society to investigate the subject, and give its opinion. If the theory is correct, every fruit grower ought to know it.

ENTOMOLOGY.

MR. COLEMAN came prepared to report the results of his plan for the prevention of the round-headed borer, which he has advocated so strenuously the past year. He is desirous that the Society should share with him the benefits of his experience. Last winter, Mr. Coleman wrapped 2,000 apple trees with paper, covering the outside with a thick coating of pine tar. Upon taking off the wrappings, he found the trees entirely free from borers, but found large numbers of the codling-moth worm spun up under the papers, which were readily destroyed. He believes the remedy to be effectual in not only preventing the working of the borer, but also in enabling one to capture the codling moth. He watched the process all along, and found but nine or ten deposits of eggs above the paper, and all of those dead but two. He believes pine tar to be entirely harmless to the trees. He also tarred 150 trees on the bark, as an experiment. They have grown so much this season as to crack the tar open. He emphatically condemned some members of the Society for having denounced his remedy a humbug before giving it a trial.

JOS. SAVAGE "confessed judgment," but denied any "criminal intent." He said "humbug" in imitation of Mr. Coleman, when a former remedy was presented to the Society. The explanation was sufficiently conciliatory.

N. P. DEMING, in discussing the length of time during which the round-headed borer beetle deposits its eggs, claimed that the deposit extends from about the 15th of May until the middle of September.

FORREST SAVAGE caught a couple of beetles on the 17th of October.

E. A. COLEMAN admitted that a few eggs may be deposited as early and late as mentioned, but claimed that the major part is laid in about four weeks from the middle of June. He stated that Mr. Barnes had told him of an orchard that had been tarred, by which the borers had been kept off, and the trees not injured.

G. C. BRACKETT's opinion was called for. He said that on this subject it had been frequently made and recorded. That Mr. Coleman was right, according to the authorities. Prof. Riley, who was one of the best authorities, had seen fit, however, to recede from some of his positions. Mr. Brackett, though opposed to washes, considers that pine tar, if sufficiently reduced, may not injure the tree. That the borer, when driven from its proper point, will make an "oviposition" higher up in the tree, wherever a congenial spot may be found.

MR. WATT referred to two old orchards that had been tarred, where many of the trees were now dead.

MR. COLEMAN: I can point out old orchards that are almost defunct, where no washes whatever have been used. The cost of tarring 2,000 trees is \$5.10.

MR. CRUTCHFIELD had kept 1,000 trees free from borers with only two days' work each year.

SMALL FRUITS.

E. A. COLEMAN referred to the Turner (red) raspberry. He set out five hundred plants on the 1st of May, and gathered two bushels of fruit. He thinks they will prove a success in Kansas. Samuel Miller, in Missouri, has fruited them successfully for four years. Many of his plants not a foot high have been loaded with fruit.

H. S. FILLMORE set out some plants last year, the growth of which had been rather unsatisfactory. It was stated that Mr. Osborn, of Illinois, has five acres of the Turner raspberry, which bears well after the first year.

MR. KANE has tried the Hornet, which is a red variety, and it winter-kills badly. If the Turner should prove hardy, it is just the berry for Kansas.

MR. COLEMAN: All kinds of black raspberries and blackberries had borne abundantly the present year all over the county, and the canes of both at the present time were looking finely.

PROF. CARRUTH had some experience with the Miami. The early berries were good, but the rest of the fruit would dry up and wither. He thinks he did not get the genuine variety.

NOMENCLATURE.

GEO. Y. JOHNSON, committee, reported as follows: "Your committee would call special attention to a very fine seedling sweet apple, originated by Mr. Thomas Seetin, three and one-half miles southeast of Lawrence, which has the merits of size, shape, color, flavor and keeping qualities. It

will, with care, keep until March in good condition; and I would suggest the name Seetin's Sweet be given the apple by this Society."

The Society unanimously voted the name.

VEGETABLE GARDENING.

JOSEPH SAVAGE exhibited an early variety of potatoes of much merit, the seed of which was sent him by the Agricultural Department at Washington. He generously distributed them among the members.

HANDLING FRUIT.

MR. WATT reported that he had shipped fruit to Denver, Colorado Springs, Wichita and other points, and was well satisfied with the returns from every point. He also reported that he gathered up the unclaimed fruit at the late Kansas Valley Fair, and sold the same for \$4. His expenses were seventy-five cents for plates and seventy-five cents for cartage; the balance (\$2.50) he paid over to the Treasurer.

The usual vote of thanks was tendered the host and hostess for their hospitality, and the meeting adjourned.

MEETING HELD NOVEMBER 16, 1878, AT THE STATE UNIVERSITY, LAWRENCE.

President G. C. Brackett called the meeting to order before the dinner hour, and called for the minutes of the last meeting, which were read and approved.

ORCHARDS.

The subject of orchards being called for, the Secretary remarked in response that he had been cutting cions for the last few days for grafting, and found the new wood much longer than usual, especially the Jonathan and Rawles Genet, both of which varieties are among our lightest growers. The fruit buds set for the next crop were very abundant and plump.

SMALL FRUITS.

Upon small fruits, MISS LOLA BELL said that, owing to the low price of blackberries, she had dried about one hundred and twenty-five pounds. Had used the Zimmerman dryer and the sun, but found both ways to be slow and tedious, owing to the large amount of moisture contained in the blackberries. She thought that, with berries at five cents per quart, it would pay better to sell than to dry; but when they fell to three and four cents, she chose the drying; preferred drying to canning, but complained of the low price of the dried fruit in market, which was only ten cents per pound at retail.

D. G. WATT: Dried fruit in the market appeared as if it was shriveled on the canes, and was made up largely from refuse fruit unfit for marketing green, while Miss Bell's fruit was made from plump berries, and was better

worth fifteen cents per pound than the common article was ten cents. He had the right for this county on a dryer that was ahead of the Alden, and should soon know more of its cost, and would report more fully at the next meeting. He thought the fruit growers of the county would be much benefited by a large dryer at some central point. Dried blackberries and grapes were shipped in large quantities to the old country for making wine.

D. G. WATT reported his strawberries as making a small growth, while his raspberries and blackberries had done finely.

ENTOMOLOGY.

N. P. DEMING said the tree cricket had done him considerable damage the past season, by eating a hole into the apple and causing it to rot. It was a lively little insect, and rather difficult to capture. He had a specimen pinned down at home, which he had forgotten to bring along, but would refer to the subject more fully at the next meeting.

During the discussion which followed, the PRESIDENT said the tree cricket laid its eggs in the pith of the young shoots, and that there was no effective way of fighting it that he knew of.

THE SECRETARY reported a small flock of English sparrows upon the city park, from D. L. Hoadley.

PROF. SNOW, being present, confirmed this report, having noticed a flock of eight or ten in that vicinity.

MISCELLANEOUS DISCUSSION.

CHANCELLOR MARVIN responded to an invitation to make some remarks, by saying that no longer ago than last evening he was rehearsing with a friend the history of the growth of fruit and cereals in the Mohawk valley, New York; that after that valley had ceased to produce its wonted crops, the Genesee country opened up as far west as Buffalo; that the Genesee wheat sold higher than any other in the United States. After several years of successful cropping, the weevil and Hessian fly put a stop to this success by destroying the crop almost entirely. At this time one Mr. Bowers began studying the nature of the soil and the habits of these insects, and began experimenting. He gathered all the long, early heads of wheat, and by selecting the best seed in that way for several years, brought out the Bowers wheat, which ripened two weeks earlier, thus escaping the ravages of the weevil and Hessian fly. He also cited a similar case in corn-raising in Genesee, from which the "Blunt" corn originated. The patent office is now distributing the Blunt corn all over the country. It produces from two to five ears upon each stalk. The lesson he would draw from these examples was that the early crops were the safest in any country, so far as he knew. What was true of wheat, corn and vegetables was true of fine stock. It would degenerate by neglect. The farmers of this State could not expect

such crops for the next ten years as have been gathered during the last two years.

E. A. COLEMAN had been told that Oliver Barber brought more and better apples into town than any other man in this county from the same number of trees, and that he put rotted manure around his trees in unstinted measure—say one good load to a tree. He believed manure would keep any crop.

D. G. WATT agreed with this latter remark, but excepting sweet potatoes, which he thought better without manure, as manure increased the vine and lessened the tuber.

Miss Lola Bell, by request, repeated Miss Alice Carey's "Order for a Picture;" after which Mrs. J. Savage recited an original poem, entitled—

SOWING AND REAPING.

In the world's broad fields of labor
There is work enough for all,
Not only for the strong and great,
But for the weak and small.

For there are none so affluent
They have no need of toil,
With brain or muscle, head or hand,
As tillers of the soil.

And one thing is always certain:
Whatever the crop we sow,
That we must surely reap the same,
"Whether we will or no."

And if we sow of thorns and weeds,
We cannot well complain
If in the harvest we shall find
No full and ripened grain.

Life's spring-time is for sowing;
And for culture, summer hours;
That in autumn we may gather
Ripened fruit in sunny bowers.

Which shall grow more sweet and mellow,
As the winter days draw near,
And shall bring us joy and beauty,
Making glad life's closing year;

That when the angel reapers
With their sickles sharp, shall come,
We may gather up our sheaves,
And go singing "Harvest Home."

FOREST TREES.

The Secretary then read a short paper upon this subject.

The cottonwood tree was for many years looked upon by many of our early settlers with suspicion and disfavor, and it was charged with being uncleanly in its habits—in fact, a regular breeding-ground for disreputable bugs and noxious insects. This prejudice, whether deserved or not, gradually wore away as years rolled on, until latterly it has been as extensively planted as any of our native varieties. It not only decorates our fields, roadways and forests, but is almost everywhere planted in close proximity to our dwellings. One obvious reason for this wide spread of the cottonwood is, no doubt, its thrifty growth and easy propagation. I think it may safely be said to outstrip all other trees in rapidity of growth; more especially true is this when the roots reach down to underground currents of water. I have one tree that is twenty years old from the seed, that would make 400 feet of sawed lumber, and furnish a cord of four-foot wood from the top. Many other trees might be sampled, no doubt, of larger growth along our streams.

Within the last three or four years a new enemy of the cottonwood has made its appearance, and that is the cottonwood borer. It attacks the tree about midway from the earth, boring into the heart of the tree, and thereby weakening it so that the first strong wind that blows will break off the top, and the stump usually dies in consequence. This borer seems to be of the flat-headed species, and remains in the tree over one winter, and then comes out in beetle form, to propagate its own species. This pest is increasing rapidly, in fulfillment of the law, I suppose, that if we increase any one species of tree, its enemies are also proportionately multiplied. The cottonwood, as a forerunner to other more hardy timber trees, is almost invaluable. Its trunks, when peeled, make excellent rails and poles for fencing, and its top furnishes a good quality of summer firewood.

As an after-growth in our cottonwood groves, I have used successfully the black walnut, blue ash, and box elder. The walnut is propagated by planting the nuts; the ash, by transplanting, or sowing the seed; the same is true of the box elder. The seed of both these latter varieties may be gathered in the fall, and sown immediately, or kept over till spring, and sown broad-cast upon the surface, with no other covering than the leaves, and they will be beaten in by rains and grow.

Among the very best of our native trees is the honey locust. It is thus far free from all insect foes; is of hardy, luxuriant growth. It has a peculiar glossy, lustrous foliage, with a wealth of bright green color seldom equaled and never surpassed by any other tree. It is propagated by both sprouts and seed. Mr. Snyder, of Highland, Kansas, is my authority for saying that both the thornless and the thorny trees come from the same seed. The honey locust is a remarkably domestic or family tree. Set out a tree where you will, and it will soon have a young family growing up around it—not in a thicket or jungle at all, but each at a measured respectable distance from the other, making it peculiarly adapted to parks and lawns.

The native or wild mulberry tree for many years resisted all my efforts at transplanting it upon high prairies, and I only succeeded in making one tree grow after this tree became old enough to bear berries. The young mulberry trees come up very plentifully all over my forest and orchard ground, from the droppings of birds after eating the berries. These young trees I find very easy to transplant, and they grow finely afterward. The roots of the mulberry are strikingly similar to those of the Osage orange, both in color and sponginess of texture.

The Osage orange is of slow growth, but worthy of a more general cultivation among our forest groves. Its timber for posts and stakes is next in value to red cedar, and fully on a par with mulberry. The bark of the orange wood should be peeled off, to keep out the borer from the wood. I have used stakes from the Osage orange for the last ten years, and they are still seemingly as sound as when first cut down. The foliage of the orange is of a peculiar waxy-green.

The leaves of my hackberry trees have for several years been afflicted with the sting of the gall-louse, which renders them unsightly in appearance; otherwise the tree is healthy, and of thrifty growth. It never sprouts, though, and I think it multiplies from seed.

I have propagated the elm considerably from the seed. It grows readily in nursery rows, and is a tough-fibered, hardy tree. It takes kindly to all sorts of soil, and I have seen it thrive when set in the sod. One peculiarity of the elm which interests me a good deal is this: When a tree is taken up for transplanting or market, there will spring up in the place it occupied from a half-dozen to a dozen other little elms from the rootlets left in the ground. I have now scores of elms fit for transplanting which have grown up in this way.

I am happily disappointed in the sugar maple; it thrives much better than it promised years ago when first introduced in our midst. No enemy seems to prey upon either its wood or leaf. It takes kindly to almost any location; even among our rock-ribbed bluffs it seems quite at home. Mr. John Wilder has a remarkably thrifty grove of sugar maples upon one of the highest points adjoining our city.

The rebud tree is quite ornamental, and is readily propagated from seed: so is the coffee bean, but I find it to be of very slow growth. The pawpaw I never could make grow, either from sprouts or seed. If we could succeed in transferring them to our upland groves, they would be a great addition to our list of valuable undergrowth trees.

DR. MARVIN desired some information in regard to planting black walnuts, as he desired to put some out on the college grounds.

E. A. COLEMAN: Spread them out upon the ground thinly, and cover with two or three inches of earth, and leave them to freeze and sprout; after which plant where desired.

N. P. DEMING was putting in several bushels this fall on his own grounds. He put them in with a hoe, two in each hill, so as to make sure of one tree from both nuts.

DELEGATE TO STATE HORTICULTURAL SOCIETY.

On motion, Mr. E. A. Coleman was elected delegate to the meeting of the State Horticultural Society, to be held in Ottawa in December. Samuel Reynolds was chosen alternate. The Society voted to pay the delegate's expenses.

Several excellent pieces of music were sung, under the direction of Mr. S. Reynolds; also, quite a number of instrumental pieces of music, well rendered under the lead of F. Savage, Miss Spaulding presiding at the organ.

Specimens of the cottonwood borer were exhibited by the Secretary, which were afterward sent on to Prof. C. V. Riley for identification.

The Society then adjourned, to meet at the same place on the third Saturday in December.

MEETING HELD DECEMBER 21, 1878, AT THE STATE UNIVERSITY.

President G. C. Brackett called the meeting to order, and the exercises were opened with music.

The Secretary announced a communication from Prof. C. V. Riley, and by request read, as follows:

WASHINGTON, D. C., December, 1878.

The cottonwood borers you sent were duly received. They are, as I wrote you they would probably turn out to be, *Saperda calcarata*, Say—the species that is doing so much injury in your State. Yours, very truly,
C. V. RILEY.

HOME ORNAMENTATION.

[An essay prepared by Miss Lola Bell, of Lawrence.]

"MAKE HOME BEAUTIFUL.

"More than building showy mansions,
More than dress and fine array,
More than domes and lofty steeples,
More than station, power and sway—
Make your home both neat and tasteful;
Bright and pleasant; always fair;
Where each heart shall rest contented,
Grateful for each beauty there.

"Seek to make your home most lovely—
Let it be a smiling spot,
Where in sweet contentment resting,
Care and sorrow are forgot;
Where the flowers and trees are waving,
Birds will sing their sweetest songs;
Where the purest thoughts will linger,
Confidence and love belong.

"Where each heart will rest contented,
Seldom wishing far to roam—
Or, if roaming, still forever
Cherish happy thoughts of home.
Such a home makes man the better,
Pure and lasting its control—
Home, with pure and bright surroundings,
Leaves its impress on the soul."

The above song, which has long been a favorite here, is a brief description of a beautiful home, and its effects on the inmates. There are but few persons who do not admire stately buildings and magnificent furniture; but though these features are not to be depreciated, they are of comparatively slight importance to the real comfort and beauty of home; for let the architecture be ever so magnificent, and the inmates supplied with apparel of the most elegant style, if these are not surrounded with the influences which the beauties of nature will add, the home is a mockery and the inmates selfish

and cold-hearted—strangers to the joy and comfort and beauty which nature, if invited into the home, would bring.

Our country homes, where there is plenty of room for the free growth of nature's beauties, afford excellent opportunities for cultivating and exhibiting taste in ornamenting the home. The busy season on a farm comes at a time when the work of ornamentation seems impossible; but if the inmates possess a real love for the beautiful, and will exert themselves to accomplish a little now and then, they will be surprised at the improvement thus made.

First, let us consider the grounds—the outer home. Our fruit trees of various kinds are ornamental as well as useful; but there is much of beauty in variety, and with a very little work and expense we can obtain a fair variety of forest trees and ornamental shrubs. The elm, box elder, maple, Osage orange and others are easily transplanted, and all beautiful.

The cultivation of flowers is comparatively neglected. The labor and expense of having them about us the whole year is so slight, and the pleasure and comfort they bring are so great, that we wonder that every household does not encourage their presence. They are one of the finest gifts of Providence, and most profusely given. The poor can have them as well as the rich. They are never out of place. They cover the rubbish by the wayside, they adorn the lawn, they tint the landscape, they cheer the sick-room, they climb old forest trees, and everywhere lend an influence of cheerfulness and hope by their simple, innocent beauty.

“God might have made the earth bring forth
Enough for great and small;
The oak tree and the cedar tree
Without a flower at all;
We might have had enough, enough,
For every want of ours—
For luxury, medicine and toil,
And yet have had no flowers.

“Then wherefore, wherefore, were they made,
All dyed with rainbow light,
All fashioned with supremest grace,
Upspringing day and night?
Springing in valleys green and low,
And on the mountains high,
And in the silent wilderness,
Where no man passes by.

“Our outward life requires them not,
Then wherefore had they birth?
To minister delight to man,
To beautify the earth;
To comfort man, to whisper hope,
When'er his faith is dim;
For whoso careth for the flowers,
Will care much more for HIM.”

If instruction were given frequently by our composition on floriculture, or by any of our members on that subject, we should all be benefited and an interest might be aroused, which would result in a more general culture of shrubs and flowers.

But it is not enough that our grounds are beautiful. Winter will strip the trees of their verdure, and all that was fair and lovely will be brown or bare, or buried in snow. Neatness and order about the grounds in winter are the only charms we can add, so let us look indoors and see what we can do there to make our homes more attractive. Beauty is a thing which pleases the senses. Neatness, cleanliness and order are the first requisites to comfort and happiness. To these let us add all the beauties of form, color and sound that are within our power.

Flowers are still one of the best help-mates. Never mind if we do have to keep fire all night to keep them from freezing—they are well worth the trouble and expense. Their bright foliage and fragrant bloom remind us of the fair days of summer, and encourage hope on the coldest, darkest days. Train beautiful climbers over the walls and about the pictures, and wear the bright leaves and flowers. Art can furnish no more beautiful ornament.

Beauty is powerful and joy-giving wherever it is found, but flowers possess a simple, innocent beauty all their own; and those who have once had them in winter will not fail to miss the cheerfulness they give a home.

Next to growing plants for ornamentation in winter, are decorations of dried grasses, flowers and evergreens. A little care during the summer to collect pretty grasses, ferns, leaves, etc., will supply a home with material for many pretty little ornaments in winter—bouquets, mottoes, wreaths, etc.

The word "Welcome," seen on entering a room, always gives one a feeling of freedom and comfort; and the word "Home" will be a source of many pleasant thoughts to those who enter after the day's toil and care. This word brings a feeling of safety and comfort, and they realize that this place is home, and strive to make it a true, happy home.

Bring everything into the home that will add to its cheerfulness—music, birds, games—everything that will bring joy, mirth and happiness, and drive away care, discord and sorrow.

But little observation is needed to discover the good influence such homes have upon the inmates. Teachers can almost describe their scholars' homes before they have seen them. The outer life affects the inner life physically, mentally and morally. Truly, as in the song above quoted—

"Such a home makes man the better,
Pure and lasting its control;
Home, with pure and bright surroundings,
Leaves its impress on the soul."

Among the audience several strangers were noticed. A gentleman by the name of Hill, from southern Illinois, took quite an interest in the proceedings. He stated that he had traveled a great deal, but had never found any

fruit to equal what he had seen in Kansas. The pears he thought were especially fine. In traveling around he had detected a *trick* in the railroad fruit peddlers. He had discovered that they bought their pears in Douglas county, and then sold them at a high price as California fruit. He also gave his method of growing that toothsome and healthful vegetable, celery. The two requisites for this plant are shade and moisture judiciously furnished. Dig a trench one foot wide and one and a half feet deep, on land that is gently sloping, in order to furnish proper drainage; spade or fork in a good supply of rotten manure, leaving it to settle a week or two before setting out the plants, which are started in a hot-bed, then transplanted into a cold bed to become stocky, and at the proper time transplanted into the trench at six inches apart. The plants are shaded with a covering of wide boards during the heat of the day, but removed at night, all through the hot months. As the plants grow, the soil is drawn up to them repeatedly. When the heat of summer is over the shade is left off altogether, and the bleaching process commenced. By following the above directions, there is no doubt but that celery can be successfully grown in Kansas.

The question was asked, What prevented apples from keeping as well this year as usual?

T. PIERSON replied that the cause arose from too early maturing. The past season was several weeks earlier than usual, and after the winter apples ripened the warm weather following caused premature decay.

JOSEPH SAVAGE read an extract from some newspaper on the causes of protracted drouth. He said that if we could not prevent our misfortunes, it was some satisfaction to know their cause. A sick man likes to know what his ailments are, and what caused them.

A resolution was passed asking the Kansas State Legislature to make the necessary appropriation for the Kansas State Horticultural Society.

PRESIDENT BRACKETT stated that the next meeting would be the annual one, at which time officers for the ensuing year would be elected.

Meeting adjourned.

TWELFTH ANNUAL MEETING, HELD JANUARY 18, 1879, AT THE STATE UNIVERSITY.

President G. C. Brackett in the chair. The minutes of the preceding meeting were read and approved. An excellent piece of music was rendered by the Society's quartette.

ORCHARDS.

THOS. PIERSON reported that the apple tree and its buds, so far as he had examined, were safe, having suffered no damage from the late cold weather.

D. G. WATT had examined some old peach trees north of the Kansas river, and found them badly injured. By cutting into the wood, he found it

black clear through. The wood of the young tree was uninjured, as were also a sufficient number of buds to insure a crop.

O. H. AYER: In my section, the young peach trees were not damaged; have not examined the old trees. Do not consider an old peach tree worth the trouble.

JAS. KANE thinks it impolitic to cut down a peach tree because the wood is damaged by freezing, as he has known trees to bear full crops afterward.

J. PARDEE: The buds of the budded peach trees are badly injured in my neighborhood.

G. C. BRACKETT: The extreme dry fall was very unfavorable for the safe wintering of the peach tree, as the severe freezing was more damaging when the ground was dry than when filled with moisture.

N. P. DEMING: The cold had not been sufficiently severe to kill any large quantity of peach buds.

MR. SMITH, of North Lawrence, reported that much damage had been sustained by the peach trees there, but thinks there will be a partial crop.

MR. FOSTER stated that seven or eight years ago his peach trees suffered from hard freezing, and he was advised by his neighbors to cut them down. He was glad that he had not followed their advice, as he had gathered from them several good crops since.

MR. KANE prefers a moist atmosphere to a dry one, in a very low temperature; considers ice on the buds a protection. He recalled a case where hard freezing occurred after peach trees had bloomed, and the embryo fruit being covered with ice, no damage was done.

MR. DEMING's experience is that a sudden change from a high to a low temperature is damaging to fruit buds.

MR. AYER said the best crop of peaches he ever raised was after a winter when the thermometer fell to 20° below zero.

MR. BRACKETT recollected that in 1872 a severe frost killed a large quantity of peach blossoms, but enough escaped to make a full crop.

A committee was hereupon appointed to examine peach buds in the vicinity of the University. Messrs. Kane, Pierson and Deming composed that committee. The report was made in due time after examining several trees, and corroborated the statements and opinions of those who had previously spoken on the subject, viz.: that the prospect for a peach crop was not unfavorable.

SMALL FRUITS.

MR. SEDGWICK was called upon, who, in his characteristic humorous way, said: I have nothing to say on this subject, but will say that I have spent a few weeks in the southwestern part of Missouri this winter, and saw an apple tree there that was a great curiosity. There was nothing remarkable, however, about the tree, except its great size and height. My curiosity caused me to measure it. Its circumference was nine feet, and its height forty-two feet eight inches. It was a forked tree, and the forks, which started four feet above the ground, measured, respectively, six feet two inches, and five

feet. The tree stands on bottom land, about ten rods from what is known as Jenkins's creek. The land generally overflows every season. I did not learn the name of the variety. Missourians do not designate fruit trees as we do in Kansas. We say, "Missouri Pippin," "Kansas Keeper," etc. Down there they say "Pa's tree" and "Ma's tree"—"the tree we killed the 'possum in," and "the tree that Nellie's colt died under." I saw other curiosities down there, some of which would not be proper to mention to this meeting. I have always been inclined to believe in the Darwinian theory, and my visit to Missouri has greatly strengthened my faith in that doctrine, for I saw some specimens there, who, if they ever sprang from the monkey race, made but a very small jump to their present mental condition. Their family libraries were also great curiosities, consisting usually of a Bible printed in the sixteenth century, and a Crockett almanac of 1840. I believe that when a man goes into southwestern Missouri, he has a right to pray as the Pharisee did, "I thank God that I am not as other men;" and then he may keep right on and thank God *twice* that his wife are not as other men's wives are.

It was suggested that Deacon Sedgwick be sent to Missouri as a missionary; but as the question was beyond the range of horticulture, no action was taken.

PRESIDENT'S ANNUAL ADDRESS.

We are known as the Douglas County Horticultural Society. Its members are known the length and breadth of our adopted State as earnest, intelligent and thoroughly practical workers in the field of horticulture; and because of this established reputation, our monthly proceedings are eagerly sought for and read with deep interest by thousands of our people in sympathy with the purposes of our organization. This reputation has secured to us the fore-ground as authority, and our teachings as published in our journals have guided many inexperienced persons into the lines of truth and success.

Our proceedings to-day are but the reflex of knowledge obtained through a score of years, under the variable conditions peculiar to our climate and soil; and the truths to-day given to the public are but the lessons resulting from many years' experience, in which adversity and prosperity have held even-handed sway. Our work as a society has passed into history. It forms a very important item in that of our county and State; and even more, it extends further—it has been made a part of our national reports. Year after year the nation has been made acquainted with the fact that this Society has an existence, and by extracts of our proceedings upon subjects assuming a national importance, we are published to the people through the government channels as an organization of no little importance. To science, this Society has given its mite; and, through its members, material has been furnished which has been of great value in solving some few of the questions which hitherto have been involved in doubt. This may seem to some an overdrawn statement of our case, but all that I have said is substantially

true; and even more could be truthfully said. I have only sought to present the results of our work, to stimulate to further and greater usefulness.

As we are again assembled in our annual gathering for the purpose of reviewing the work of the year just closed, and to secure its results, from which to draw conclusions to guide and govern our operations during the new year, let us not be unmindful of the eminent position we occupy, fully recognizing the importance of careful and well-considered action. To-day, an important part of our work will be to organize anew, for the work before us for the new year. Let that work be in the most harmonious manner, giving entire satisfaction, if at all possible.

There is but little pleasure in any of our offices outside of the desire to promote the success of the Society, and if any of our members desire to render service in this direction, grant it, and in all earnestness bid them God-speed, and thereto add your united assistance in the performance of the duties thereof. With the experience of years, and with all due deference for your action in placing me in office, I must say, in reference to my feelings, I prefer to serve you as a member only. With the privileges of the floor in discussions, etc., I believe I can render you more and better service than when incumbered with the duties of any of the prominent offices.

Having effected your organization, there follows the arranging of the work for the year. This demands your deep and earnest study, for upon the manner in which you perform it, depends the Society's success or failure.

During the past few years of fruitfulness, questions of vital importance have sprung up—questions requiring deep study and experimental tests to determine their solution. Among these, most prominent in orchards as well as other departments, is the question of varieties in reference to adaptation to soils and locations—their profitableness in tree and fruit. The introduction of late-keeping varieties of apples, which retain their flavor and complexion, is a matter I might well say demanding your increasing efforts. True, we have some few late keepers; but are you satisfied with their qualities? I think not. The Winesap and Missouri Pippin change for the worse by the 1st of January, the Rawles Genet by the 1st of April, and the Willowtwig is only good for cooking; while the Ben Davis, Limbertwig and Gilpin fail to satisfy our palates at any time. The thought has occurred to me, that the trial of late-keeping southern varieties might result in some valuable acquisition to our list. Following the recognized fact, that late-keeping varieties in the more northern States become late fall and early winter varieties when introduced into warmer climates, so late-keeping varieties in a southern latitude may become still later in more northern climates. Here is a work for our members having a prospective result of great importance, and in which we are all deeply interested. The properties thus sought are indeed of great value when considered from the point of dollars and cents.

The question of how to manage our orchards, under the deteriorating effects of age and the burden of crops, will have to be determined by careful

tests and intelligent practice. Just how to proceed to maintain a healthy vigor in growth of tree, necessary to keep the fruit well up in size and quality, has not yet been entirely defined nor practically demonstrated. The comparative difference in fruit from young and old trees is great, and, when thrown into our markets, the difference in their respective value forces upon us the conviction that something must be done to sustain equal values and the competition which all markets are liable to offer. I well remember the remark of that veteran pomologist, Dr. John A. Warder, as he passed over our collection of fruit at Ottawa in 1869, during the third annual meeting of the State Society: "Your fruit is beautiful, excelling anything I have ever seen; but," says he, "as your orchards grow old you will not be able to make such splendid displays as this and the one at Philadelphia."

The product of the orchards in this county alone in the near future must be immense, and to hold a successful competition with the young orchards, even in counties in our own State, regardless of other favored fruit States, is a matter of no small import in a financial view.

What has been said in reference to our apple orchards applies with equal force to all classes of fruit we are carrying under cultivation. A thorough knowledge of varieties of long standing, and the newly-introduced varieties, is all-essential for our protection against the wily tree peddler, whose many words and finely-wrought pictures of fruits, the like of which Dame Nature would despair of duplicating, will often delude not only the novice, but even some whose years would entitle them to the name and honor of veterans. It is estimated that in one county alone, during the year just closed, \$15,000 were invested in Russian apple trees; and I am sorry to say that at this time extensive orders are being taken from our State for varieties equally unreliable and worthless, under the representations of their great hardiness in tree and value of the fruit. I here allude to the work of agents for nurseries in Iowa, which are making a specialty of the "Wealthy," and a new one, the "Iowa Blush." These varieties may have great value in extreme northern latitudes, but from the information I can gather, are not the *coming varieties* for Kansas. I do not object to the introduction and test of any variety, but I do protest against their introduction at fabulous prices, drawn from the ignorant by unwarranted and untruthful statements of their remarkable qualities.

I would, in connection with this subject, suggest the advantage of a standing committee, to be instructed at the Society's expense, to watch for all such efforts, to gather up all information possible, and report at each meeting the results of their work.

The determination of safe and reliable methods for combatting our insect enemies sternly calls for extended efforts, and to reach this end will require most thorough experiments and vigilance. Your Committee on Entomology, as the head of this department, should be fully impressed with the necessity of vigorously conducting a course of tests, which would result in reaching successful means.

I have called your attention to but a few of the most prominent questions worthy of your consideration, in arranging your future work in our interest. Our work is extensive, and invites your best skill in carrying out its details. Endeavor to harmonize your results, as given to the public, and thereby avoid apparent confictions, which confuse the minds of the readers of our reports, affording them no satisfactory conclusions. Give utterance to no determination unless fully warranted by absolute facts in practice, and then give all the details. If a variety of fruit succeeds remarkably well with any of you, do the public the justice of a full knowledge of the locality, the character of soil, the methods of planting and culture. In this manner, the conditions necessary to success are usually understood, and guarantee, in a measure, a like result under similar conditions. With such a presentation on the part of our members, many of the seeming contradictions can be avoided, and the public can then harmonize our statements.

We do not assemble for the purpose of tearing down any practice, but to sift from it whatever of truth we can find worthy of perpetuation. To the accomplishment of such work we are organized, and if fully adhered to, we lose sight of self and prejudice, and eagerly push on in measures of great usefulness, and the ennobling influences of our pursuit will inevitably follow, and our calling will be honored and revered by all pure-minded men.

ELECTION OF OFFICERS.

The election of officers for the ensuing year was then in order, which resulted as follows: President, Martin Sedgwick, Kanwaka; Vice President, J. C. Vincent, Lecompton; Secretary, Joseph Savage, Lawrence; Treasurer, Thomas M. Pierson, Kanwaka.

ENTOMOLOGY.

N. P. Deming, chairman of this committee, reported as follows:

MR. PRESIDENT: In making my annual report on entomology, I will take up the tree cricket. I expected to have one on exhibition, but failed.

The tree cricket is of a pea-green, about three-fourths of an inch long. It inhabits in and about the apple trees. It lays its eggs in the young limbs of the apple tree, in rows, puncturing to the pith of the limb; remains there till spring. The damage it does is to eat holes in the fruit, which produces rot. These crickets are becoming quite numerous. The best mode to destroy them is to remove all limbs on which the eggs are laid, and burn them.

The cottonwood borer is doing great damage to cottonwood trees. They have nearly ruined my fine grove. The larvæ that have remained in my grove two years will probably come out this spring in beetle form; shall watch with great care to see what kind of bugs they will turn to.

There has been enough said about the apple-tree borer. A gentleman remarked, at the State meeting at Ottawa, that the Douglas County Horticultural Society knew as much about the borers as if it had made them—a good compliment for the Society.

The codling moth is quite numerous in the vicinity of Lawrence. The mode of capture has been described during our summer meetings. Two years ago Michigan flooded Kansas with her *wormy apples*. It was a noted fact that the consumers remarked the fine flavor the worms imparted to those apples, while the horticulturists throughout the State were indignant at the wholesale importation of these moths, to be let loose to ravage our orchards; but, through the influence of the horticulturists of the State, and the dealers in Michigan apples, they were obliged to keep their wormy apples at home this year. Thanks to the fruit dealer. Don't flood us again. Discard all wormy apples from market, and you will confer a lasting favor to the fruit growers of Kansas.

J. C. VINCENT called attention to the *aphis*, or root louse. A large Rawles Genet tree of his had been destroyed by it the last year. It was stated that lye was a certain remedy; or dig the soil away from the roots, and cover with ashes. Mr. Brackett's plan with nursery trees infested is to "souse" the roots in weak lye before planting. The bark louse has never been seen in the county, except in Mr. William Miller's orchard. Mr. Savage at one time set out six-year-old trees infested with the root louse, but by the use of lye it had been destroyed, and his trees are flourishing. In Pennsylvania, Mr. Kane was much troubled with the root louse, which prevailed most on rich black soil, or when manure was freely used. He deprecated the pouring of hot lye on the roots, which some advocated, as he had known it to kill the tree.

At the Society's request, Mrs. Brackett then read an essay on the

HEALTHFULNESS AND ADVANTAGES OF RURAL LIFE.

We can but admit that country life is considered a life of labor. Its hardships are numerous, and its advantages and pleasures many. The fresh, pure air gives a healthy color to our cheeks, elasticity to our steps, and vigor to our frame, which cannot be supplied in the impure air of cities. Farm life need not necessarily be more laborious than many other occupations. We need not be overtaken. I will quote a few of Dr. Wilkes's sayings, in his *Journal of Health*: "If the question be put broadly, 'Are the people suffering from overwork?' I, for one, should have no hesitation in saying no; but, on the contrary, if both sexes may be taken, I should say the opposite is nearer the truth, and that more persons are suffering from idleness than from excessive work. Medically speaking, I see half a dozen suffering from want of occupation to one who is crippled in his labors." In the case of girls, instead of work being injurious, he says he could instance numerous cases of recovery on the discovery of an occupation. A large proportion of their ailments are indeed due to the want of occupation.

Mothers are often terrified when their daughters do anything; they are so delicate that work will kill them; what they need is doctors' visits, physicks and alcohol. This is ruinous. It is remarkable what a delicate

young lady can do under powerful stimulus, as for example: A gentleman expressed his surprise to see his daughter, who could not walk many yards for a long time, owing to a pain in her back, but was soon able to walk many miles a day when she procured the support of a lover's arm.

The human body is made for work. The amount it can do is proportionate to the power of the machine; but, unlike other machines, it can be kept in vigor only by use. It is sure to rust and decay from disuse. These facts are of supreme importance at a time when growing wealth is so quickly adding to the number of those to whom work is not a necessity. A well-known writer on the poor, some time ago, divided the community into four classes: First, those who can't work; second, those who won't work; third, those who do work; and fourth, those who do not need to work. These last are apt to be supposed the happy few, and many are the efforts made to be numbered with that favored class. Science, however, is reversing the popular impression. We are learning from experience what was so long ago shown in the case of Sodom, "That fullness of bread and abundance of idleness are too often the parents of grievous ills." Better to wear out than rust out, is finding a new verification. If it were for nothing higher, our flower missions are doing important service to the health of many a hitherto-unoccupied girl. The dignity of labor is receiving a fresh impetus, and we can quote with increased confidence these lines of a song of labor:

"Oh, while you feel 'tis hard to toil
And sweat the long day through,
Remember, 'tis harder still
To have no work to do."

I make these quotations to show that the value and dignity of labor are very often fully appreciated by persons of high standing, whose opportunities have made them competent advisers.

To our boys we would say, if you have a taste for rural pursuits, you will not lack for employment. Do not forsake it, by any means. Throw all your energies into this your chosen occupation, and health and happiness will crown your efforts ten-fold.

To our mothers we would say, think not so much of the superficial education your daughters may receive at a fashionable boarding school. It is much more important that they should be reared in the pure country air, where they are not afraid to take an abundance of out-door exercise, including the good old-fashioned girlish romps and horseback rides. We should also teach them to help us in their leisure hours, and learn the mystery of the kitchen as well as the parlor. We should endeavor to make our homes the abodes of culture and refinement. We can have nearly all the advantages of town life, if we choose, without the temptations and bad company which so often ruin many of our promising youth. In our rural homes we have plenty of occupation for the young ladies of our households, and we should teach them the dignity and value of labor, and that when they have leisure

from their studies, it is not only a duty but a privilege to assist their parents. The people of Douglas county are very fortunate in having quite a number of schools of high-repute near their homes. Their children may be highly educated, many of them while living at home, away from the demoralizing associates so often found on the city streets and crowded saloons.

How few of our youth seem to accept the truth, that to the rural districts our nation is indebted for many of her most distinguished statesmen, scientists and authors. I need not mention them here; history has recorded their names. Many not only lived in the country in their youth, but found a permanent use for it. To them the city is only a market-place for buying and selling more conveniently, and its material comforts of gas and hot water are of no weight against the advantages of more perfect independence and self-respect. While our children are being educated, farm life gives them many opportunities of filling their leisure hours with pleasant, useful and healthful employment. They are in constant intercourse with nature, and cannot fail to learn each day those things that will not only be useful to them in after-life, but elevating mentally and morally. How much better to have our youth so situated and so employed, than to have them spending their leisure hours on the streets with indolent, unprincipled companions, or sitting around in the saloons and billiard-rooms, listening to the unrefined talk of those who should give them a better example.

ODE TO LOAFERS.

"They are sitting around on barrels and chairs,
Discussing their own and their neighbors' affairs;
And the look of content that is seen on each face,
Seems to say, 'I have found my appropriate place,'
Sitting around.

"In bar-rooms and groceries calmly they sit,
And serenely chew borrowed tobacco, and spit;
While the stories they tell and the jokes that they crack,
Show that their hearts have grown hard, and undoubtedly black,
While sitting around.

"The loungers—they toil not, nor yet do they spin,
Unless it be yarns, while enjoying their gin.
They are people of leisure; yet often, 'tis true,
They allude to the work they're *intending* to do,
While sitting around.

"They are always great talkers, and always self-wise,
As they whittle up sticks with horn-handled knives.
They are a cheeky old set; and wherever you go,
You will find them in groups, or strung in a row,
While sitting around."

This is but a true picture of town life for boys. Every one of us can plainly see the advantages our children have in our rural homes; and if we but try to make these homes more attractive by surrounding them with

beautiful adornments, and placing within the reach of the children innocent and interesting amusements, they too will soon see their advantages and pleasures, and have no desire to roam.

VEGETABLE GARDENING.

Mr. Sedgwick made a statement of what he had produced last summer from one acre of land, by heavily manuring and thorough culture. He planted Early Rose potatoes, and dug 326 bushels. About three weeks before digging his potatoes (on the 11th of June) he planted rows of corn between the rows of potatoes. After gathering his potato crop, he cultivated his corn, and gathered something over 42 bushels. He considers this doing pretty well from one acre.

A committee, consisting of Messrs. Brackett, Foster and Savage, was appointed to confer with the officers of the Kansas Valley Fair Association, for the purpose of arranging preliminaries for making a horticultural display at the next fair.

The Treasurer's annual report presented the very gratifying fact that the Society is SOLVENT, having a balance of \$3.84 in the treasury.

RUSSIAN TREE PEDDLERS.

These apple-tree peddlers were handled without gloves. The President stated that from all he could gather, these impostors had taken not less than thirty or forty thousand dollars out of the State the last season. It was astonishing how, by their smooth tongues, plausible stories, and misrepresentations, they had gulled the unsuspecting.

Mr. Kane referred to an old gentlemen whom he knew that they had induced to buy sixty dollars' worth of Russian trees. Although he planted them with the greatest care, scarcely one of them lived.

A committee, consisting of G. C. Brackett, S. W. Pearson and N. P. Deming, was appointed with a view to prevent further extortion and imposition on the public by these impostors.

The newly-elected President announced the following standing committees for 1879:

On Orchards—S. W. Pearson, Lawrence.

Small Fruits—O. H. Ayer, Lawrence.

Gardening—E. A. Coleman, Kanwaka.

Entomology—N. P. Deming, Lawrence.

Floriculture—Mrs. M. Savage, Lawrence.

Vineyards—Miss Lola Bell, Lawrence.

Handling Fruits—D. G. Watt, Lawrence.

Meteorology—Joseph Savage, Lawrence.

Essays and Lectures—Miss M. Macy, Lawrence.

Nomenclature—G. Y. Johnson, Lawrence.

The quartette were Misses Lescher and Grew, and Messrs. Smith and Reynolds. The exercises were interspersed with several pieces from this club,

which were well rendered. Mr. Smith sang the "Grand Old Ocean" in fine style.

After passing a vote of thanks to the singers, the meeting adjourned to the third Saturday in February.

FRANKLIN COUNTY HORTICULTURAL SOCIETY.

REPORTED BY H. P. MARSH, SECRETARY, OTTAWA.

The following are the officers of this Society for the year 1879:

President—I. Pile, Ottawa.

Secretary—H. P. Welsh, Ottawa.

Treasurer—W. J. Newton, Ottawa.

Meetings are held monthly.

JACKSON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY V. V. ADAMSON, SECRETARY, HOLTON.

The following are the officers of this Society for the year 1879:

President—J. Williams, Cope.

Vice President—Jacob Hixon, Holton.

Secretary and Treasurer—V. V. Adamson, Holton.

Meetings are held monthly.

JOHNSON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY E. P. DEIHL, SECRETARY, OLATHE.

The following are the officers of this Society for the year 1879:

President—J. M. Hall.

Secretary—E. P. Deihl.

Treasurer—J. Master.

Meetings are held monthly: during summer, in picnic form, at the residences of the members, and in the cold months at the court house, in Olathe.

LABETTE COUNTY HORTICULTURAL SOCIETY.

REPORTED BY N. SANFORD, SECRETARY.

OFFICERS FOR 1879.

<i>President</i>	H. S. COLEY, Oswego.	<i>Vice President, Jr.</i>	C. O. PERKINS, Oswego.
<i>Vice President, Sr.</i>	E. D. BEVINS, Oswego.	<i>Secretary</i>	N. SANFORD, Oswego.
<i>Treasurer</i>	J. A. GATES, Oswego.		

FIRST MEETING OF THE YEAR.

Subject discussed, best method of protecting our friends the birds.

The members concurred in the method of prosecuting all parties found violating the game law, and the Secretary was instructed to so prosecute in any and all cases.

MEETING HELD MAY 25, 1878.

Specimens of Wilson's Albany, Charles Downing, Monarch of the West and Kentucky strawberries were exhibited, the three last named taking preference on account of hardiness in all weathers.

MEETING HELD JUNE 5, 1878.

The Society met at the residence of the Secretary, for an examination of his small-fruit grounds, particularly the raspberries, which were then ripening. The canes were found to be loaded with large, fine berries. The favorite varieties with Mr. Sanford are McCormick and Doolittle. Had there been a single grumbler present, he would have been compelled to admit that raspberries are a success in the hands of one who will give them fair treatment.

The Amsden's June and other early peaches were found badly rotting, as also some varieties of plums and grapes.

A sumptuous feast was prepared by the lady members in the grove, and being announced ready, was soon surrounded and enjoyed by all present.

A new red raspberry—the Thwack—was found on these grounds, which was heavily loaded. Should it sustain its present indications in coming years, it will prove to be a valuable acquisition.

MEETING HELD JUNE 22, 1878.

H. S. Coley, Mrs. Draper and N. Sanford exhibited red currants, and reported the bushes growing finely, and bountifully productive. Mr. Coley's bushes are grown about one rod north of an orchard and hedge-row, on ground sloping to the northeast, and the plants are heavily mulched. Mrs. Draper's plants are located on the north side and in the shade of a grape

arbor; ground slopes to the west. Mr. Sanford's are on a western slope, and on the north side of a two-years-old hedge, about four feet distant.

BIRDS.

H. S. COLEY: The robin does more harm than good, and the cedar or cherry bird is very destructive to fruits and grains.

MR. PERKINS recommended bonfires in and around orchards, to allure the curculio to destruction.

CORRECTIONS.

In the Society's proceedings, published in the *Kansas Horticultural Report* for 1877, page 314, the statistics 12,750 acres in nurseries, 432,050 acres in orchards, and 10,000 acres devoted to vineyards, should be 127.50, 4,320.50, and 100, respectively.

MEETING HELD JULY 6, 1878.

Society met as per adjournment, at the residence of H. S. Coley. The friends began to arrive by 10 o'clock, and at 11 the meeting was called to order by President Williams. The following persons were received as members: Mr. P. Stout, Mrs. M. M. Stout, and Mr. D. Doyle.

Mrs. Coley delivered a long, interesting and profitable lecture on the fruits of the season. She stated that fruit should have time to ripen after coloring; that after taking on full color, they are still immature, and have not proper flavor. If used at that time, the amount of sugar required would cost more than the fruit itself; but if left to ripen well, a very little additional sweetness would be sufficient to bring it to its right flavor. By practical demonstration, she proved her theory to be correct.

At the close of the essay, the Society took a recess of two hours, and proceeded to partake of the good things spread in bountiful profusion in the grove west of the house. Many pleasant and profitable things were said and ideas advanced, which, if strictly followed, would make mankind better—physically, mentally and morally.

The afternoon session was opened by the exhibition of samples of the following fruits: Apples—Red Astrachan, Red June, Hightop Sweet, and American Summer Pearmain. Peaches—Troth's Early and Crawford's Early; and Chickasaw plums. The Red Astrachan was spoken of more highly than any other summer apple. Troth's Early is rotting less than any other early peach, although this variety is seriously affected. All seemed well satisfied with the Chickasaw plum.

The question being raised, "What shall we, as horticulturists, plant for profit?" Mr. Coley said: "If I had it to do again, I would plant nothing but apples and pears."

MR. UPDEGRAFF: We are becoming more nearly convinced, each year, that this part of Kansas will be a great pear country. No country has given better satisfaction in that line than ours, up to the present time.

A number of fine bouquets were exhibited; and in the discussion of flowers, most of the ladies spoke highly of perennials, on account of their easy culture, not being half the trouble annuals are, and in a new country, where there is but little time to spend in our flower gardens, it behooves us to get the most for the least labor.

MRS. SANFORD, in canning fruits, says she sweetens the fruit at time of canning, and believes it to be preferable to waiting till you want the fruit to use.

MRS. COLEY sweetens raspberries, gooseberries and plums, and sometimes cherries.

MRS. STOUT is not sure that it is a benefit to sweeten at time of putting up.

MRS. WILLIAMS has been experimenting in this line, but as yet is undecided as to the value of sugar to be used at this time.

The Society took a recess for the purpose of examining the orchard of brother Coley. The Red Astrachan trees were beautiful, being laden with ripe fruit, as were the Prince's Harvest, Red June and Hightop Sweet. The last three named varieties were more or less scabbed. Most of the older trees are bearing, but the Ben Davis and Willow Twig take the lead. The Genet is not giving satisfaction. Young trees, set out during the last two or three years, were blown about until some of them are very much injured. Believed to be caused by the softness of the ground at the time of our heavy winds in the spring.

It was decided to hold our next meeting at the maple grove of Mr. C. G. Braught, in Pleasant Valley, Saturday, July 27th, at 11 o'clock A. M. All our members are expected to be present, and to bring samples of fruit and flowers, also their baskets well filled with edibles.

MEETING HELD JULY 27, 1878.

The Society, by invitation, assembled in a grove on the farm of C. G. Braught. This fine grove covers about three acres, and is formed of maples, elms, ash and black walnuts, planted eight feet apart, in rows, six years ago, and many of the trees are now from twenty-five to thirty feet high. After an hour's social chat the members adjourned to dinner, after which the exercises opened.

A. Kaho exhibited several varieties of apples and peaches, and reported the fruit crop in a fine condition, excepting early varieties of peaches, which continued to rot. Grapes were also rotting.

Mrs. Charles Campbell placed on exhibition a sample of green-apple jelly, which was pronounced the finest of the season.

There are on the grounds of Mr. Braught 3,000 apple, 700 peach, 200 pear, 100 cherry, apricot, plum and other fruit trees, two acres of blackberries, and a fine vineyard (Concords preferred). Here was found the white or currant blackberry, a pistillate planted among the Kittatinny—a staminate variety—to receive the fertilizing element of the latter.

DISPLAY OF FRUITS.

The following is the report of the committee on making a display of fruits at the county fair:

"Your committee appointed to receive, arrange and display fruit for the Society at the agricultural fair beg leave to report, that we built a pyramid sixteen feet long and seven feet high, which we had completely covered with plates of fruit, principally apples and pears. Of apples, we had sixty varieties, seventeen varieties of pears, and a few late varieties of peaches—all fine specimens and of excellent quality. Among the most attractive apples were the Ben Davis, Yellow Bellflower, Willowtwig, Jonathan and Twenty-ounce. But the show of pears was the great attraction, it being the first season that the young trees in this vicinity had borne fruit, the Duchesse being the largest, one specimen exhibited by H. S. Coley weighing one and one-half pounds. The season for the Bartlett being past, only a few samples were on exhibition, which were large and fine and the favorite of everybody; while the Vicar of Winkfield seemed to be the most productive.

Respectfully submitted. N. SANFORD.

TREE PLANTING.

Nature planted the first trees in the county; and it is supposed that the oldest tree, until it was cut down, five years ago, was a black walnut, which measured nine feet in diameter at the stump. It stood two miles southeast of Oswego, on the west bank of the Neosho river.

A few peach trees were growing on the present site of Oswego, and also where Chetopa now stands, at the time of the first white settlement.

In the fall of 1865, Jabez Zink planted some peach and apple seed. During 1866, John Richardson planted a few trees. A. T. Dickerman put out seed of apple, peach, cherry and quince. About the same time, Mr. Weaver, of Hackberry, brought some apple trees from the north and planted them. Two of them are still alive, and bear heavy crops annually. During 1867, several small orchards were planted. David Clover got some apple seedlings from Missouri, one pear sprout that a neighbor brought from the north, and a few peach trees. D. W. Clover and R. W. Wright got some peach trees that came down the Neosho river from Leroy on a flat boat. Wright got some apple trees and planted them on the fruit farm of H. S. Coley.

In 1868, Joseph Barker planted the famous orchard known as the Capt. Parker orchard. Several orchards were set out this year, but fruit planting did not fully commence till 1869 and 1870; since which time the number of acres in orchards has rapidly increased, until the number of trees is as follows:

Apples.....	265,707
Peaches.....	228,640
Plums.....	8,493
Cherries.....	31,986
Pears.....	10,975
Total.....	535,711
Acres in small fruit.....	207
Miles of hedge fence.....	1,804

Small fruits were planted in quantity in 1869, and have increased in proportion to other fruits.

Soft maple, Lombardy poplar and cottonwood were planted for groves and wind-breaks in 1871 and 1872.

In 1869 an interest was taken in growing hedge fences of Osage orange, which has steadily increased until there are at present nearly two thousand miles of hedge fence in the county.

LYON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY R. MILLIKEN, PRESIDENT, EMPORIA.

OFFICERS FOR 1879.

President.....ROBERT MILLIKEN, Emporia. | *Secretary*.....PERRY EDWARDS, Emporia.

Meetings are held monthly.

At the regular annual meeting of the Lyon County Horticultural Society, held in Emporia, on Saturday, January 4th, the following resolutions were unanimously adopted:

Whereas, The experience of the past has shown the great capabilities of the State of Kansas for producing the fruits of the temperate zone; and

Whereas, A great part of this success is due to the efforts of the organization known as the "Kansas State Horticultural Society," in collecting and disseminating valuable information, involving the combined experience of the most extensive growers of the State: therefore, be it

Resolved, That the Lyon County Horticultural Society does most earnestly urge upon the Legislature the importance of a sufficient appropriation to enable the State Society to carry on its good work in securing and disseminating the valuable experience on fruit and forest-tree culture, and that our members of the Legislature be respectfully requested, in the interest of horticulture, to favor a liberal donation of State funds for this end.

Resolved, That the Secretary of this Society be instructed to furnish each member of the Legislature from this county with a copy of these resolutions, and to furnish a copy to each of the papers of the county for publication.

MANHATTAN HORTICULTURAL SOCIETY.

REPORTED BY AMBROSE TODD, SECRETARY.

OFFICERS FOR 1879.

President.....T. C. WELLS, Manhattan. | *2d Vice President*.....J. W. BLAIN, Manhattan.
1st Vice President.....PROF. E. GALE, Manhattan. | *Secretary*.....AMBROSE TODD, Manhattan.
Treasurer.....R. D. PARKER, Manhattan.

Regular monthly meetings have been held, with a few exceptions, during the year—during late spring, summer, and early autumn months, at the

houses of members, and balance of time at the horticultural rooms of the Agricultural College. Many lessons have been learned by interchange of views and methods of practice: In the planting and care of fruit-bearing trees and plants. A great many trees have been planted in this locality within the past few years, which have made a remarkable growth when proper care has been given them. Many farmers are now obtaining their fire-wood by thinning out the groves planted in years gone by. The planting of trees, as it progresses year by year, will have a marked effect upon our climate for the better, and add much to the beauty of the country. It should be encouraged by all legitimate means.

MONTGOMERY COUNTY HORTICULTURAL SOCIETY.

BY I. A. WALKER, SECRETARY, INDEPENDENCE.

This Society was organized March 20th, 1877.

Pursuant to notice, the second annual meeting of the Society was convened at the court house, in Independence, January 4th, 1879.

The following officers were elected for the current year:

President—M. D. Henry, Independence.

Vice President—A. A. Stewart, Syacamore.

Treasurer—Jacob Addison, Drum Creek.

Secretary—L. A. Walker, Independence.

After the transaction of business relating to the local operations of the Society, the following resolutions were submitted, considered and approved:

Resolved, That we would earnestly recommend to the consideration of the Legislature, that an adequate appropriation be made for sustaining the Kansas State Horticultural Society sufficient to defray the necessary expenses of a thorough, practical and judicious management of the interests involved, and the publication of the annual reports in unobjectionable form of printing, paper and binding.

Resolved, That we heartily approve the transactions of the State Horticultural Society, in the disapproval of the killing and traffic in the birds of Kansas, and that the members of this Society would join in recommending the enactment of laws more effectual than those upon the statutes of the State at the present time, that prohibit the killing, selling and carriage of the same within the limits of the State.

Ordered, That a copy of these resolutions be furnished the Representatives from Montgomery county, and, together with the Secretary's and Treasurer's reports, be furnished the press for publication.

The Secretary then read the following report:

SECRETARY'S REPORT.

The membership of this society is as yet too limited to presume upon for the cost of maintaining a thoroughly-successful horticultural society within the limits of Montgomery county; nevertheless, it is receiving increased at-

tention. A very creditable display of fruits and flowers was presented on exhibition at the annual fair of the County Agricultural Society, in October, for which we are especially indebted to the following-named persons:

Mrs. J. W. Grew, exhibition of plants and flowers; Messrs. Todd of Drum Creek, Krone of Sycamore, Lattimore of Rutland, J. J. Anderson of Drum Creek, Don. Lavy of Drum Creek, and Bridgman of Sycamore, for display of apples; Messrs. Anderson and Lattimore, for display of pears; Messrs. Barnes, Davis, Edwards, and others, for display of vegetables and canned fruits; J. J. Anderson, for an excellent sample of wine.

The plates of apples, among the fruits shown, were especially creditable, as well as pears from the few trees that have arrived at bearing age in this new county.

The crop of peaches, grapes and apples fell short of our expectations, both in quality and quantity, this year, from causes possible at all times, yet exceptional, and to be overcome in future years, by cultivation, selection, care and climate. The adaptation of varieties suited to our location is now, and will long continue to be, a matter of great interest.

Small fruits were plentiful in their season, and likewise in all kinds of vegetable planting such results were obtained as should be acceptable to those who planted with care and who cared well for the planting—results in general as should cheer the horticulturist in south Kansas, within the 37th degree of north latitude, to strive for that perfection that so genial a climate invites.

Your Secretary was chosen as a delegate to the State Horticultural Society during the last year, the transactions of which will be given in the report for 1878.

The seventh annual volume has been distributed, in which you will see that by virtue of our county organization our society and Montgomery county are duly credited.

It might be justly deemed an evidence of quick intelligence on the part of members in our home organization to entertain favorable views in regard to the largest and fullest support to the State Society by the Legislature of Kansas, ample and sufficient to place before the people in creditable form its proceedings regularly every year. The State of Kansas is from year to year presenting to the world a most active working of the several interests and industries within the State, that to some extent are promoted by appropriations out of the State treasury. The fact is also presented of an economy in money, that is based upon a general tax levy of five mills or less on the dollar, and exceedingly low valuations. While such is the fact, the great fruit interests of the State appeal to the people and their representatives for that share of State patronage that this growing interest demands. Further, if not, then our home horticultural societies might also retrograde into the unknown, above which we would lift ourselves and be recognized, upon our advantages, as a fruit-growing section of a fruit-growing State.

Your attention is respectfully called to this, and that you order some definite manner for the distribution of this Society's quota of the State Horticultural Reports.

A very free interchange of views should obtain in relation to all the work as a society we have to do. A prosperous season in 1879 will, of course, add very much to the interest in this regard, and each and every year will bring with it such degrees of interest that this great industry and care invites.

Montgomery county is now rated among the best in Kansas. We have a genial climate, and already in population, improvements and culture are so far advanced that we may reasonably presume upon the continuance of the advantages we possess, a greater improvement in fruit growth under influences that will increase with judicious care at the hands of intelligent planters and cultivators.

Holding as the county does, a great number of citizens in fixed attachment to our section, we may reasonably suppose that as additions are made they will be generally such as seek the conditions we appreciate.

The Treasurer's account shows that the expenses have been kept within the annual receipts.

MIAMI COUNTY HORTICULTURAL SOCIETY.

REPORTED BY E. W. ROBINSON, SECRETARY.

OFFICERS FOR 1879.

<i>President</i>	J. M. DEBALL, Fontana.	<i>Trustees</i>	{	HIRAM STEVENS,
<i>Vice President</i>	J. B. REMINGTON.			DAVID ANDERSON,
<i>Secretary</i>	E. W. ROBINSON.			W. R. WAGSTAFF.
<i>Treasurer</i>	E. H. SHERAR.			

The Society was organized April 26th, 1879, at the city of Paola.

The following is the constitution adopted by the Society:

1. This association shall be known as the Miami Horticultural Society.
2. Its object shall be the advancement of the science and art of Horticulture.
3. Its membership shall consist of annual members, paying an annual fee of fifty cents each; ladies to become members by simply giving their names to the Secretary of the Society.
4. Its officers shall consist of President, Vice President, Secretary, and Treasurer, and three Trustees, who shall be elected by ballot at each annual meeting of the Society, and shall hold office for one year or until their successors shall be elected.
5. It shall hold regular meetings each year as follows, to wit: In October and June, at such particular time and place as the Society may designate;

the June meeting to be known as the annual meeting. Adjourned meetings shall be held every month, when practicable.

6. This constitution may be altered or amended at any annual meeting of the Society, by a two-thirds vote: *Provided, however,* That notice of intention to alter or amend shall be given at least one meeting previous to action being taken upon it.

PAWNEE COUNTY HORTICULTURAL SOCIETY.

REPORTED BY R. B. GEE, SECRETARY, GARFIELD.

OFFICERS FOR 1879.

<i>President</i>.....L. MANNING, Garfield.	<i>Secretary</i>.....R. B. GEE, Garfield.
<i>Vice President</i>.....W. H. GILL, Larned.	<i>Treasurer</i>.....J. W. GRANGER, Garfield.
<i>Librarian</i>.....A. E. SMITH, Garfield.	

The following are the standing committees for the present year:

Orchards and Small Fruits—C. C. Chevalier, Garfield.

Forestry, Hedges and Vegetable Gardening—J. W. Granger, Garfield.

Entomology and Floriculture—H. Baker, Garfield.

THIRD ANNUAL MEETING.

The third annual meeting of the Society met at Garfield January 20th, 1879. The meeting was called to order by President L. Manning.

Minutes of the previous meeting were read and approved.

Communications and correspondence were read, among which was a letter from G. C. Brackett, Secretary of State Horticultural Society.

The following resolutions were then offered:

Resolved, That our State Legislature be urged to support the bill making appropriations for the support of the State Horticultural Society, and that the Representative from this county be instructed to support said bill.

Resolved, That it was an unwise act in our County Commissioners to stop the bounty on rabbits, and we recommend to them the renewal of the bounty, to be in force during the entire year, and also a bounty on the pocket gopher, as such a bounty must certainly prove to be economy in the end.

Resolved, That we urge the necessity of each school board throughout the county taking steps at once to improve and set out shade trees on the school grounds.

Resolved, That the thanks of this Society be tendered to the Kansas State Horticultural Society, and their worthy Secretary, G. C. Brackett, for copies of their proceedings for 1877.

The question of forest trees—the best kinds, mode of culture, and the distance apart to plant them—was discussed with much interest. It was the general opinion that the cottonwood, box elder and ash were the three best kinds for timber culture, as they were all easy to make live, being native of the State and county.

A barrel rabbit trap was on exhibition, by C. C. Chevalier, which has proved a success on his fruit farm. A diagram of said trap can be found on page 112, Kansas State Horticultural Report of 1877.

RENO COUNTY HORTICULTURAL SOCIETY.

BY L. J. TEMPLIN, SECRETARY.

OFFICERS FOR 1879.

President.....L. HOUK, Hutchinson. | *Secretary*.....L. J. TEMPLIN, Hutchinson.

Meetings are held monthly.

The following paper was read at the April meeting, 1879:

EXPERIENCE IN HORTICULTURAL PURSUITS.

BY L. HOUK, HUTCHINSON.

Having been requested to furnish a few notes as to my experience in horticulture in this county, I comply with pleasure, though the time given to that delightful pursuit, in my case, has only been what I could snatch casually from a life given to professional work. I have been here nearly seven years. Commenced planting trees on freshly-turned sod in the spring of 1872; lost all, that year. Tried again, in 1873, with but little better success. Planted again, in 1874. That year we had a drouth, and in the latter part of July the locusts came, stripped all the trees of their foliage, and, though not a great many were destroyed outright, the survivors were mostly so enfeebled as to die during the winter. Perhaps I should qualify the last statement so as to say that a majority died during the winter of 1874-5. I have a few good healthy apple trees, planted in the spring of 1874, one of which—Large Early Bough, I think—bore and matured two apples this year. In 1875, I continued planting, and with fair success, though, as on previous years, apples were much injured by bark blight, or sun-scald. Some have attributed the injury to borers, but I think they have mistaken effect for cause. According to my observation, the borer has only appeared after the tree had been already injured.

My largest planting was in May, 1876. A party was here with a lot of trees, mostly apple, which he could not sell, and hence let me have them on special terms. The planting season being past by nearly two months, the prospect was poor, but my success was beyond my expectations. I saved about 200 apple trees, about two-thirds of the whole. That season they made but little growth, but were healthy, and in 1877 and 1878, they have made a splendid growth. I should mention here, that we had the locusts again in 1876, and with more fatal results than in 1874, for the reason that by the 1st of October the "hoppers" had left, and the trees had commenced a vigorous second growth. In this condition a very severe frost caught them, early in October, and the result was a wholesale destruction of peaches and plums, with great injury to apples, pears, etc. I lost 300 budded peach trees, some of which would have borne the following year.

To sum up, I now have about four acres in apple, peach, cherry, pear and

plum trees. The growth of the last two years has been altogether satisfactory. During that time, the apple has shown no scald or bark disease. With me, pears grow well. I have seen no blight except in trees which, as I suspected, were affected before I got them.

From what I have seen, the improved Chickasaw varieties are the only plums worth planting here on a large scale. Our soil is light and sandy—just the thing for the curculio.

The Morello family of cherries are thoroughly at home here. Sweet cherries have been but little tried.

The Concord grape is almost exclusively planted. One planter in this vicinity, Mr. George Cole, has also Dracut Amber and Clinton. These varieties all gave him a very large yield this year. I saw one Agawam vine this season which greatly surpassed Concord vines in its vicinity in vigor, quantity of fruit, size of bunches and berries. This was on the farm of J. B. Kohnle, who is an intelligent and enthusiastic horticulturist.

I lost all my strawberries by "hoppers" in 1874, and did not plant again till this year. They have grown well this season.

Have not had faith enough to try currants.

Have tried Blackcap raspberries. These have done well. Planted the Clarke one year, but it was a failure.

The Houghton and Pale Red gooseberry are first rate.

Returning to apples, my experience has been too imperfect to enable me to speak intelligently as to sorts. I have planted for winter the leading Western kinds, as Ben Davis, Winesap, Missouri Pippin, Genet, White Winter Pearmain, Dominie, Jonathan, with some Roman Stem, King of Tompkins County, Willow Twig, etc. The best test I have made of the comparative vigor of different kinds was in a plantation of 2,000 root grafts, planted last spring. Of about twenty-five sorts, Elarkee and Red Winter Pearmain made by far the best growth—some attaining a height of five feet, with good, heavy stems. Yellow Bellflower grows well in our light soil, and nothing but absolute failure will stop my planting it.

I have a very large list of peaches, including Yellow St. John, Columbia, and other Southern sorts, but cannot tell as to comparative merits.

My place is immediately west and adjoining the city of Hutchinson, and bordering on the Arkansas. The soil is mostly a light sandy, with sandy subsoil, but a part has clay subsoil; in fact, a portion of my orchard is a heavy black soil. The best growths of all varieties have been on the lightest soil.

Of forest trees, the cottonwood, box elder, walnut, white ash, gray willow, elm, soft maple and coffee bean have done well with me, the latter being very slow at first, but growing well when established.

WABAUNSEE COUNTY HORTICULTURAL SOCIETY.

REPORTED BY H. A. STILES, SECRETARY, PAVILION.

OFFICERS FOR 1879.

President.....ABNER ALLEN, Wabaunsee. | *Secretary and Treasurer*, H. A. STILES, Pavilion.

[The following reports and essays, read at the meetings of the Society, have been furnished for publication.—SEC'Y.]

SUMMER APPLES.

BY ABNER ALLEN, WABAUNSEE.

I mean by this term to include those varieties that ripen in the warm months, and are therefore not suitable for housing. These choice varieties of fruit have descended to us as a legacy from ages which have preceded our own, each variety, to some extent, representing the care and labor of generations of men who have preceded us in the field of horticulture. I imagine that each individual who has contributed to the grand result of horticulture at the present day, watched every improvement of the past with the same care and delight that we bestow on each improvement on varieties known at the present time. Sad indeed would be our lot as horticulturists, if compelled to exchange our luscious varieties of summer apples for the inferior wildling from which, by care and cultivation, they have been produced, and though our summer apples seem to have been brought to a state of perfection, yet improvement is not to be despaired of; it will surely come, by the slow march of time, and we have reason to believe that future cultivators will find themselves indebted to us in the same manner that we are indebted to those who have preceded us. The number of good varieties ripening in the warm season is very great, each possessing peculiarities of its own. In many varieties, these differences are as strongly marked as the tastes of individuals, varying from sweet to sour, with every combination of the two; and notwithstanding the fact that summer apples come in competition with other choice fruit, they must be considered the great source from which a large portion of mankind must obtain their principal supply of fruit. Dried apples are principally from this source.

The season of summer apples is somewhat prolonged in our climate; our rich soil and genial climate hasten the maturity of the early kinds. Some of the winter varieties of the northeast, become summer varieties here.

In considering the merits of different kinds, many things in addition to the quality of fruit must be taken into consideration, as adaptability to our soil and climate, productiveness, size and beauty of fruit, vigor, hardiness and symmetry of the tree. Then the various uses to which we wish to put the fruit must be considered, as most varieties are adapted to special uses

only, and those kinds that are valued for particular purposes are so valued mostly because of their poor quality for other uses.

Which is the earliest kind that is worthy of a place in the orchard? I will name the Tetofsky, a slow-growing, hardy, productive Russian apple, of fair quality, as my choice, though I must say, that where the number of varieties is limited, better kinds, though a little later, should be selected, such as Early Harvest, which is indispensable in the small collection. The Red Astrachan, also, should have a place in all collections. The Primate is not showy, but desirable on account of its excellence. The Summer Rose is very desirable, on account of the beauty and great excellence of the fruit; tree hardy, vigorous and productive. Early Red Margaret, handsome; fruit good for culinary uses. Carolina Red June, handsome, productive, and popular as a market fruit. Sweet Bough—tree tender in some situations, unproductive in all; fruit excellent. Cole—a hardy, vigorous, very productive, showy fruit; quality fair, lacks character, mild sub-acid. Chenango Strawberry, fruit fair, large, showy; quality superior; one of the best. Duchess of Oldenburgh, fruit of great beauty, but coarse and sour; excellent for cooking; tree very hardy and productive; season, August. Summer Pound Royal, a favorite of ours in days of lang syne, not sufficiently tested here; promising; fruit similar to Lowell, quality better. Benoni, fruit handsome, of excellent quality. Early Pennock, fruit of the largest size, very showy and salable; tree vigorous and very productive; quality fair; season, August. Lowell: For vigor of tree, hardiness, productiveness, size and beauty of fruit, this variety excels for culinary use. Cooper's Early White is a market apple of some note; it is not destined to maintain its present position. Gramar Pearmain, a new variety of more than ordinary pretensions; very productive; fruit fair, handsome, good for all purposes. Maiden's Blush: This well-known and popular kind is not destined to remain without rivals here. Hawthornden, similar to the above, tree late in bloom; the fruit keeps better. Stannard: This variety ripens here with the Maiden's Blush; tree very vigorous, hardy, productive; fruit large, fair, handsome, quality good. Golden Sweet, tree vigorous, hardy, productive; fruit large, handsome, quality medium. Jersey Sweet, one of the best of summer sweet apples. Trenton Early, tree very vigorous, hardy and productive; fruit good; one of the most desirable kinds. Harvest Red Streak, tree hardy, productive; fruit good for culinary use. Keswick Codlin, tree hardy, productive; fruit valued only for cooking. Sweet Pear, one of the hardiest and most vigorous trees known; fruit large, good. Clyde Beauty, tree vigorous; fruit very large, handsome, good; not fully tested here; not an early bearer. Gravenstein, one of the good old kinds which should not be overlooked; fruit large, handsome, quality excellent. Saxton: This is good, both in tree and fruit, but, like many of the other kinds named, could be spared without injury to horticultural interests. American Summer Pearmain, an old kind, which has long been the standard for excellence; tree very slow, but hardy;

fruit medium size, handsome, quality best; one of the best keeping of summer apples. Many more kinds are under cultivation here, and years will be required to determine the relative value of the different kinds. It is confidently hoped that a few of the new kinds will be of surpassing excellence, and it is evidently true that the great majority of the newly-introduced sorts will retire to the shades of oblivion, to make room for newer candidates for public favor.

STONE FRUITS.

BY H. A. STILES, PAVILION.

At the head of this class of fruits stands the peach, unrivaled in its fine qualities. Its ease of propagation and early productiveness should place it among the staple articles of food during its season. With our modern dryers, we may prepare them for future uses with their fine richness but very slightly reduced. We have this fruit in all its lusciousness, fresh from the tree, from the first of June to the middle of November; a luxury which we cannot obtain from any other class through a period of one-third this time.

The treatment of the seed of stone fruit for propagation is quite simple. It should be placed in sandy loam, in thin layers, in the autumn, and kept moist, and submitted to freezing sufficiently to burst the shell, and planted as early in the spring as the ground can be plowed. [Or the pits can be planted in rows where they are to be grown, in the autumn.—SEC'Y.] If to be planted in the spring, all such as the frost has failed to open should be carefully cracked, or they will not germinate until after another winter's frost. The culture should be such as is well given to corn. The work of budding should be done as late in the fall as the bark will separate freely to receive the buds, and it is advisable to protect these buds during winter, either by turning a furrow well upon the stocks with a plow, or wrapping with paper or a thin piece of corn husk, which, dampened, can be easily tied around the buds.

A sandy soil has been preferred for a peach orchard, but a well-drained clay soil has equal advantages, and is believed to add longevity to the tree.

The peach borer is the worst enemy we have to contend with in the growing of this tree. There are other insects quite troublesome. Our present comparative immunity from these is to be attributed more to our occasional failures in crops of fruit than to our skill in the application of remedies. The tree cricket, and worm in the fruit (mostly the larvæ of the curculio), have multiplied quite heavily during the past two successive years of productiveness, and if one or two more fruitful years ensue it will require the utmost skill of the cultivator to save even a fair proportion of his crops from the destruction of these enemies. The borer, though numerous, is still under the control of a careful cultivator; a careful examination twice a year for its destruction will suffice to keep it in subjection, and when once the orchard is free from it a few quarts of ashes heaped around the body of the tree will generally prove a successful preventive of future attacks.

Mildew, which has made its appearance within the past few years, is confined mostly to the white-fleshed and glandless varieties, and seldom if ever attacks the yellow-fleshed varieties. This disease, being of fungus growth, should yield to an application of sulphur, lime-dust and ashes. The yellows is the most unconquerable disease known in the peach orchard, but fortunately for Kansas it is not known within her limits.

Every locality is now so well supplied with choice varieties, I will not attempt to give a list for planting, but will simply advise the planting of such as will furnish fruit in succession from early summer to late autumn.

Much has been said and written of the benefits of methods for protection to the buds against the late spring frosts, but I know of none deserving of a recommendation. The inventive genius of some persevering horticulturist may yet devise some successful means for this purpose, and an Edison in horticulture may yet spring into existence for our relief. The field is ample, and success probable. Who will first proclaim "Eureka?"

Next to the peach, I class the apricot as worthy of more extensive culture. It requires similar treatment as that given the peach, blooms a little earlier, but will generally fruit whenever the peach does. The fruit is delicious, and the tree quite free from insects and diseases, when worked on the plum stock. A tree on my grounds of the Breda variety, now ten years old, is very thrifty and healthy, and has borne fruit in profusion during the past two years. It suffered but very little from the grasshopper incursions or from drouth, and bids fair to continue healthy and productive for many years to come.

The hard-shell almond is well adapted to this climate, and in rapid wood growth excels all other fruit trees. It can be made profitable, not only for the nuts, but also the wood it produces. It is one of the first to start its growth in spring, and when the peach survives the late spring frosts, this also generally escapes the injury.

The cherry is fully appreciated, and finds a place in every orchard. The Early Richmond leads all other varieties, and seldom fails to produce annual crops of good, if not the choicest, fruit. No fruit is more certain, the tree is hardy, and of the earliest to fruit. All fruit growers should plant of this variety. The common Morello is a fair bearer, while the red or pie cherry is shy.

PLANTING AND GROWING TREES IN THE ORCHARD.

BY ABNER ALLEN, WABAUNSEE.

Prepare the ground as for planting corn, or if the land is very heavy, plow in lands as deep as possible. The lands should be of the same width that the rows of trees are to be, so that the dead-furrows will be where the rows of trees are to be planted. On land so prepared plant without digging holes, raising the earth about the trees. On land of porous nature, such as our river bottoms, holes should be dug large enough to contain the roots when spread out in their natural position. Select trees that are two or three

years old, cut off all broken roots, also the ends of roots that are bruised. Place the roots of the tree in the hole so that the crown will not be more than two inches below the level of the surface. Spread them out, work fine earth in among them, and when they are covered with earth, pour in water sufficient to thoroughly settle the earth among them. By this means the small side roots are left in their natural position instead of being pressed down in a bunch as they usually are. When the earth is settled by tramping, and the water has settled away in the hole, level the earth around the tree.

I believe in the thorough annual cultivation of orchards, both young and old, but I think that it is not best to continue it later in the season than July, as we should not stimulate growth late in the season. Hoed crops may be grown among young trees. I prefer corn or potatoes; but small grain should not be grown in an orchard, as it takes up all the moisture which it can extract from the soil, leaving it so dry that the trees cannot grow. Please bear this in mind, as too much emphasis cannot be placed on the statement. A vigorous growth should be maintained every year, by cultivation, and manure when necessary. After the trees come into bearing, great demands are made on the soil, to perfect the wood growth and bring the fruit to maturity, and when any necessary ingredient is deficient in the soil, either the tree or the fruit, or both, must suffer. An annual top-dressing of well-rotted manure will be found very beneficial. Coarse or rank manure I do not recommend, as it makes a breeding-place for grub worms, and a harbor for tree crickets and other noxious insects. It also reflects the heat. I condemn mulching for the same reasons. In my opinion, no mulch is equal to mellow or well-pulverized earth. I have known instances where a tree that had been annually manured and cultivated produced more fruit than five trees of the same age and variety, in the same soil and situation, that had not been so cared for.

I do not think that those who follow my directions will be troubled with borers, particularly if they are not extravagant in the use of the saw and pruning-knife, but keep watch for them. Cut them out; wash the bodies and large limbs of your trees once or twice each year with strong lye, to which flour of sulphur has been added. This will destroy the eggs of the borer, if applied at the proper season; it keeps the bodies of the trees free from moss and fungus, and renders the locality uncongenial to many of the insect tribe.

To protect trees from rabbits, cut coarse prairie grass in suitable lengths, stand it upright around the body of the trees, tie with twine or bark. Of many trees protected in this way in my orchard, not one was injured by rabbits or sun-scald at the time of the locust raids.

A good wash may be made of one half-gallon of soft soap, one half-pound of flour of sulphur, and three gallons of water. Apply with a broom to the trunk and large branches of trees twice a year, April and June. These

washes should not be allowed to come in contact with leaves or green twigs. Of the two washes, I prefer the one first mentioned.

As to distance at which trees should be planted, and the plan of alternating the peach with the apple, the direction of the rows, etc., nothing very definite can be said. My apple trees are planted 24x30 feet. A portion of the orchard has peach trees between the apple trees, planted in the twenty-four-foot space. The peach trees break the force of the wind, so that the apple trees grow in a more upright position; but the peach trees soon interfere with the apple. I am satisfied that some modification of this plan will prove the best for young orchards. After the apple trees are large enough to protect each other, the peach trees should be removed.

WYANDOTTE COUNTY HORTICULTURAL SOCIETY.

REPORTED BY M. B. NEUMAN, SECRETARY, WYANDOTTE.

OFFICERS FOR 1879.

<i>President</i>.....W. W. DICKINSON, Wyandotte.	<i>Secretary</i>.....M. B. NEUMAN, Wyandotte.
<i>Vice President</i>.....I. P. MOORE, Kansas City.	<i>Treasurer</i>.....JOSIAH SMITH, Wyandotte.

This Society was organized on the 10th day of August, 1878.

At an adjourned meeting held in the city of Wyandotte on the 10th day of August, 1878, the following constitution was adopted, to wit:

ARTICLE 1. This association shall be known as the Wyandotte County Horticultural Society, and shall be auxiliary to the State Horticultural Society of Kansas.

ART. 2. The objects of this Society shall be to advance the art of horticulture, and to increase the interest in horticultural science in our county.

ART. 3. The officers of this Society shall embrace a President, Vice President, Secretary, Treasurer, and an Executive Committee of five, who shall be elected annually, and shall hold their respective offices until their successors are elected and installed: *Provided*, That vacancies may be filled by the action of any regular meeting of the Society.

ART. 4. This Society shall hold its annual meetings for the election of officers, on the first Saturday of January, in each year.

ART. 5. The regular meetings of this Society shall be held on the first Saturday of each month at such particular time and place as may be designated at a previous meeting, or, when necessary, by the Executive Committee.

ART. 6. Members of this Society shall pay into the treasury an annual fee of \$1.00 each: *Provided*, That lady members and members of the press of Wyandotte county shall be exempt from such payments. Restrictions as to the manner of admitting new members may be provided in such by-laws as may be hereafter adopted.

ART. 7. This constitution may be amended by a majority of the members present at any annual meeting, or by the vote of two-thirds of all the members present at any regular meeting after special notice of such amendment at the next previous regular meeting.

ART. 8. The first set of officers elected shall hold their positions until the first annual meeting, and until their successors are elected and installed.

Said constitution was then signed by W. W. Dickinson and seventeen others, and the Society was fully organized by the election of the following-named officers:

President—W. W. Dickinson.

Vice President—George L. Kroh.

Secretary—M. B. Neuman.

Treasurer—Josiah Smith.

Executive Committee—George L. Kroh, C. H. Carpenter, Rudolph Wiltz, I. P. Moore and W. J. Huffaker.

The Wyandotte County Horticultural Society takes pleasure in reporting to the State Society that, at the Kansas City Exposition, in September, it competed for and captured the best premium offered on fruits—\$50—the proceeds of which have aided in placing our Society in a good financial condition.

As a matter of further interest, I may report that, at an adjourned meeting held on the 16th day of November, ult., Mr. W. W. Dickinson was appointed a special committee to collect statistics of fruit culture in Wyandotte county; to ascertain what varieties have been planted in the county; which varieties have proved satisfactory, and which have proved partial or total failures.

When the report of Mr. Dickinson in the premises shall be received and duly formulated, we hope to be able to publish information of the highest practical value to the fruit-growers of our county.

[Additional report, made April 25th, 1879.]

FRUIT PROSPECTS FOR 1879.

Apples, cherries, and even pears, show at this date prospects for a fair crop. Grapes quite promising. Raspberries not injured as much as blackberries. The latter promise a very meager crop.

LIST OF FRUITS APPROVED BY THE SOCIETY FOR PLANTING IN WYANDOTTE COUNTY.

For Summer—Early Harvest, Carolina Red June, Hawley, Keswick Codlin, Lowell.

Autumn—Maiden's Blush, Rambo, Fameuse, Mother, Porter, and Hubbardston Nonsuch.

Winter—Winesap, Ben Davis, Jonathan, Rawles Genet, Willow Twig, Rome Beauty, Smith's Cider, Baldwin, Grimes's Golden, Fallawater, and Yellow Bellflower.

Selections of stoned fruit not yet settled by our society, but all leading varieties are being tested. The same conditions as to small fruits.

Pear culture has not yet proved profitable in Wyandotte county, but our society still has hopes of better results.

The officers of our Society for 1879 are as follows:

President—W. W. Dickinson, Wyandotte.

Vice President—I. P. Moore, Kansas City, Mo.

Secretary—M. B. Neuman, Wyandotte.

Treasurer—Josiah Smith, Wyandotte.

Executive Committee—George L. Kroh, C. H. Carpenter, Rudolph Wiltz, W. J. Huffaker, Wyandotte; I. P. Moore, Kansas City, Mo.

VOTED FRUIT LIST FOR KANSAS, FOR 1878.

APPLES.

The apple list has been made up from returns of the following Circular No. 7. Of this circular, ninety-seven copies were sent to as many of the most thoroughly experienced orchardists in the fruit-producing sections of our State, seventy-three of which appear in this report—the balance claiming inability to determine a list, on the ground that their orchards were too young to establish the character of the varieties of apples planted:

[CIRCULAR No. 7.]

SECRETARY'S OFFICE,
KANSAS STATE HORTICULTURAL SOCIETY,
LAWRENCE, February 15, 1878. }

DEAR SIR: I herewith submit for your careful consideration, "The Voted Apple List" of this Society for 1878. This list was made up from the recommendations of many of the most experienced and practical fruit-growers in this State, as most reliable for general culture. The varieties are arranged in the order of preference, and you are earnestly requested to give it a careful study; and from experience and observation, if deemed advisable, make such changes as the facts will warrant—either by substituting varieties proven to be more worthy, or by changing in the order of preference.

VOTED LIST.

SUMMER.

<i>Five preferred varieties.</i>	<i>Substitute.</i>	<i>Number in Order.</i>
1. Early Harvest.....
2. Carolina Red June.....
3. Red Astrachan.....
4. Early Pennock.....
5. American Summer Pearmain....

AUTUMN.

<i>Five preferred varieties.</i>	<i>Substitute.</i>	<i>Number in Order.</i>
1. Maiden's Blush.....
2. Rambo.....
3. Lowell.....
4. Fameuse.....
5. Fall Wine.....

WINTER.

<i>Ten preferred varieties.</i>	<i>Substitute.</i>	<i>Number in Order.</i>
1. Winesap.....
2. Ben Davis.....
3. Jonathan (late fall, early winter).....
4. Rawles Genet.....
5. White Winter Pearmain.....
6. Missouri Pippin.....
7. Willow Twig.....
8. Rome Beauty (late fall, ea. win.).....
9. Gilpin.....
10. Dominie (late fall, early winter).....

Please note in your returns, as far as practicable: 1st, *Character of soil* best adapted to varieties; 2d, *Locations*—high, low, or middle lands; 3d, *Presentations*—north, east, west, or south exposures; 4th, *Form of trees*—high or low heads.

Respectfully,

G. C. BRACKETT, *Secretary.*

An examination will show that the following varieties are found in both summer and autumn lists; conditions of a local character will sometimes hasten, and also retard, the period of maturity, and may account for the variableness of the reports: Cooper's Early White, Golden Sweet, Lowell, Autumn Strawberry, Keswick Codlin, Benoni, Chenango Strawberry, Jersey Sweet, Large Yellow Bough, Belmont, Gravenstein. In the autumn and winter lists will be found the following: Wine, Ortley, Grimes's Golden, King of Tompkins County, Smith's Cider, Golden Sweet, Westfield Seek-no-further.

The following is the report of those voting upon the apple list, in answer to the following questions:

1st—*Character of soil best adapted to varieties.*

WHOLE NUMBER REPORTING, 53.	
Clay and sand combination..... 6	Lime 4
Loam and sand combination..... 7	Black..... 24
Red clay..... 5	No preference 7

A general recommend for well-drained soils.

2d—*Locations: high, low, or middle lands.*

WHOLE NUMBER REPORTING, 65.	
Upland 39	No preference..... 8
Middle..... 14	Bottom 4

3d—*Presentations: north, east, west, or south exposures.*

WHOLE NUMBER REPORTING, 61.	
North, with an east or west bearing..... 40	No preference..... 11
South, with an east or west bearing..... 10	

4th—*Form of trees: high or low heads.*

WHOLE NUMBER REPORTING, 65.	
Low (16 to 30 inches)..... 48	High (4 to 5 feet) 8
Medium 9	

PEACHES, PEARS, ETC.

The list of peaches, pears, plums, cherries, grapes, small fruits, and forestry and ornamentals, has been made up from replies of County Vice Presidents to Circular No. 5.

SUMMER APPLES.

Five varieties
in large
preferred
der given

* No name given.

VOTED FRUIT LIST--CONTINUED.

SUMMER APPLES.

Total No. votes given	72	61	65	58
I. ————— *	1	2	3	4
Welcome Wells.....	1	2	3	4
G. M. Vaughn.....	1	2	3	4
John W. Fisher.....	1	2	3	4
A. G. Chandler.....	2	3	4	5
K. ——— Leeceworth * ..	1	2	3	4
J. ——— Valley Falls*	1	2	3	4
James A. Drake....	1	2	3	4
Geo. F. Allen.....	1	2	3	4
Wm. A. Wells.....	1	2	3	4
A. D. Chambers.....	2	1	3	5
John Flanagan.....	2	3	4	5
J. C. Crist.....	1	2	3	4
George W. Ashby..	1	2	3	4
H. ——— *	3	5	2	4
C. G. Wickesham..	1	2	3	4
Geo. Coleman.....	1	2	3	4
J. W. Loar.....	1	2	3	4
H. E. Van Denan..	5	1	3	4
J. S. Tyler.....	1	2	3	4
J. N. Hall.....	1	2	3	4
D. S. Jones.....	3	4	5	..
J. Walter * ..	1	2	3	4
T. C. Wells.....	1	2	3	4
Sam. Poston.....	1	2	3	4
F. Wellhouse.....	3	2	4	5
Ordon Curry.....	1	2	3	4
J. S. Van Winkle..	1	2	3	4
Dr. Housley.....	1	2	3	4
J. W. Williams.....	1	2	3	4
N. P. Deming.....	1	2	3	4
T. F. Cook.....	1	2	3	4
Wm. Outter.....	1	2	3	4
C. H. Graham.....	1	2	3	4
A. A. Ripley.....	1	2	3	4
J. M. Miller.....	1	2	3	4
A. G. Wilkie.....	1	2	3	4
C. B. Lines.....	1	2	3	4
A. Allen.....	1	2	3	4
G. ——— *	1	2	3	4
	2	3	4	5
	6	7	8	9
	10	11	12	13
	14	15	16	17
	18	19	20	21
	22	23	24	25
	26	27	28	29
	30	31	32	33
	34	35	36	37

AUTUMN APPLES.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	70	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	58	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	59		
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	60	58		
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	61	59	60		
5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	62	60	61	60		
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	63	61	62	61	60		
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	64	62	63	62	61	60		
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	65	63	64	63	62	61	60		
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	66	64	65	64	63	62	61	60	60	
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	67	65	66	65	64	63	62	61	60	60	
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	68	66	67	66	65	64	63	62	61	60	60	
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	69	67	68	67	66	65	64	63	62	61	60	60	
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	70	68	69	68	67	66	65	64	63	62	61	60	60	60
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	71	69	70	69	68	67	66	65	64	63	62	61	60	60	60
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	72	70	71	70	69	68	67	66	65	64	63	62	61	60	60	60
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	73	71	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	74	72	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	75	73	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	76	74	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	77	75	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	78	76	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	79	77	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
23	24	25	26	27	28	29	30	31	32	33	34	35	36	80	78	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
24	25	26	27	28	29	30	31	32	33	34	35	36	81	79	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
25	26	27	28	29	30	31	32	33	34	35	36	82	80	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
26	27	28	29	30	31	32	33	34	35	36	83	81	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
27	28	29	30	31	32	33	34	35	36	84	82	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
28	29	30	31	32	33	34	35	36	85	83	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
29	30	31	32	33	34	35	36	86	84	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
30	31	32	33	34	35	36	87	85	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
31	32	33	34	35	36	88	86	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
32	33	34	35	36	89	87	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
33	34	35	36	90	88	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
34	35	36	91	89	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
35	36	92	90	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
36	93	91	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
94	92	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60	60
95	93	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	60
96	94	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
97	95	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
98	96	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
99	97	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
100	98	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
101	99	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
102	100	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66
103	101	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85																		

*No name given.

VOTED FRUIT LIST—CONTINUED.

AUTUMN APPLES—CONCLUDED.

77	No.	es given	78
1	—	—	79
2	—	—	80
3	—	—	81
4	—	—	82
5	—	—	83
6	—	—	84
7	—	—	85
8	—	—	86
9	—	—	87
10	—	—	88
11	—	—	89
12	—	—	90
13	—	—	91
14	—	—	92
15	—	—	93
16	—	—	94
17	—	—	95
18	—	—	96
19	—	—	97
20	—	—	98
21	—	—	99
22	—	—	100
23	—	—	101
24	—	—	102
25	—	—	103
26	—	—	104
27	—	—	105
28	—	—	106
29	—	—	107
30	—	—	108
31	—	—	109
32	—	—	110
33	—	—	111
34	—	—	112
35	—	—	113
36	—	—	114
37	—	—	115
38	—	—	116
39	—	—	117
40	—	—	118
41	—	—	119
42	—	—	120
43	—	—	121
44	—	—	122
45	—	—	123
46	—	—	124

WINTER APPLES.

[illegible]

* No name given.

SUMMARY OF VOTE SHOWING COMPARATIVE ESTIMATE OF VARIETIES.

WINTER APPLES.										
	Total vote on each variety.									
	Votes as No. 1.	Votes as No. 2.	Votes as No. 3.	Votes as No. 4.	Votes as No. 5.	Votes as No. 6.	Votes as No. 7.	Votes as No. 8.	Votes as No. 9.	Votes as No. 10.
Ten preferred varieties.										
Winesap.....	58	5	4	...	...	...	2	...	...	69
Ben Davis.....	3	50	2	...	...	4	...	2	1	69
Jonathan.....	1	3	48	5	4	1	...	2	1	65
Rawles Genet.....	2	6	4	47	5	1	8	2	...	70
White Winter Pearmain	...	1	1	1	6	2	5	2	...	50

WINTER APPLES.										
	Total vote on each variety.									
	Votes as No. 1.	Votes as No. 2.	Votes as No. 3.	Votes as No. 4.	Votes as No. 5.	Votes as No. 6.	Votes as No. 7.	Votes as No. 8.	Votes as No. 9.	Votes as No. 10.
Ten preferred varieties.										
Missouri Pippin.....	2	2	4	6	5	41	3	1	1	65
Willow Twig.....	1	1	2	2	6	7	43	3	1	67
Rome Beauty.....	...	1	1	1	1	5	3	43	2	59
Gilpin.....	...	1	...	...	3	2	4	4	40	53
Dominie.....	...	2	...	...	3	2	4	3	1	57

VOTED FRUIT LIST—CONTINUED.

List of Varieties.		PEACHES.																			
		Allen	Anderson	Atchison	Bowdon	Brown	Charles	Clay	Clond	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *	Clond *
1	Crawford's Early	8	1	2	3	5	3														
2	Hale's Early	1	1	1	2	1	1														
3	Crawford's Late	9	4	2	3	6	4														
4	Heath Cling	3	5	3	5																
5	Large Early York	7	8																		
6	Stump-the-World	12		4		2															
7	Amsden	4																			
8	Old Mixon Free	2	6																		
9	Alexander	5	2																		
10	Troth's Early	8	2																		
11	Ward's Late Free																				
12	Old Mixon Cling	7																			
13	Columbia	10		6																	
14	Morris White	9		4																	
15	George the Fourth																				
16	Yellow Rarieripe																				
17	Early Beatrice	6																			
18	Red Cheek Melocoton																				
19	Red Rarieripe																				
20	Smock																				
21	Morris's Red Rarieripe																				
22	President																				
23	Early German																				
24	Early Tillotson																				
25	Heath Free																				
26	Grosse Mignonne																				
27	Snow																				
28	Late Admirable																				
29	Druid Hill																				
30	Heine's Cling	10																			
31	Early Barnard	11																			
32	La Grange																				
33	Yellow Alberge																				
34	Cole's Early Red																				
35	Coolidge's Favorite																				
36	Steadley																				
37	Jacques's Rarieripe																				
38	Early Rivers																				
39	Amelia																				
40	Salway																				
41	Rodman's Cling																				
42	Lemon Cling																				
43	Harper's Early																				
44	Early Louise																				
45	Wyandotte Chief																				

PEARS.

1	Bartlett	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Flemish Beauty	2	3	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Duchesse d'Angouleme	3	2	3	3	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	Seckel	5	2	3	3	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	Louise bon de Jersey	4	4	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Vicar of Winkfield	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
7	Buffum																				
8	White Doyenne																				
9	Howell																				
10	Belle Lucrative																				
11	Glout Morceau																				
12	Lawrence																				
13	Winter Nellie																				
14	Doyenne d'Ete	6																			
15	St. Germain																				
16	Osband's Summer																				
17	Bloodgood																				
18	Clapp's Favorite																				
19	Sheldon																				
20	Amire Joannet																				

*Not sufficiently tried to determine a list of successful varieties.

VOTED FRUIT LIST—CONTINUED.

PEACHES.		Total vote for each variety.
Wyandotte.....	1 2 9	27
Woodson.....		26
Wilson.....	5 3	28
Wadsworth.....	5 2 6	21
Summer.....	4 3 5 9	16
Shawnee.....		15
Riley.....		18
Rice.....	1 3 2	12
Republic.....	4 5	7
Reno.....		6
Potlacomtse.....	5 1 7 6 2	21
Pawnee.....		16
Osborne.....		17
Osaage.....	1 5	12
Neesho.....	4 1	5
Morris.....	1 2 4 3	10
Montgomery.....	4 3 6 7 2 5 1 8	36
Mitchell.....		1
Miami.....	4 12 6	19
McPherson.....	1 2 11	14
	5	15
	7 10 9	26
	8 9	17
		18
		19
		20
		21
		22
		23
		24
		25
		26
		27
		28
		29
		30
		31
		32
		33
		34
		35
		36
		37
		38
		39
		40
		41
		42
		43
		44
		45

PEARS.

[illegible]

*Not sufficiently tried to determine a list of successful varieties.

VOTED FRUIT LIST—CONTINUED.

List of Varieties.		PLUMS.															
		Allen	Anderson	Atchison	Bourbon	Brown	Butler	Cherokee	Clay	Cloud	Cowley	Crawford	Coffey	Davis	Dickinson	Douglas	Elk
1	Wild Goose	1	2					1			1						
2	Miner																
3	Chickasaw																
4	Damson																
5	Lombard																
6	Sand																
7	Purple Egg																
8	Green Gage																
9	Coe's Golden Drop																
10	Emigrant																

CHERRIES.

		Allen	Anderson	Atchison	Bourbon	Brown	Butler	Cherokee	Clay	Cloud	Cowley	Crawford	Coffey	Davis	Dickinson	Douglas	Elk
1	Early Richmand	1	1	1	2	2	1	2	1	1	1	1	1	1	1	1	1
2	Common Morello	5	3	2	3	2	1	2									
3	English Morello	2	3														
4	May Duke				1												
5	Governor Wood																
6	Belle Magnifique																
7	Reine Hortense		2														
8	Leib																
9	Belle de Choisey																
10	King's Early																
11	Kentish																
12	Rocky Mountain																
13	Black Heart																
14	Oxheart																
15	May Biggareau																

GRAPES.

		Allen	Anderson	Atchison	Bourbon	Brown	Butler	Cherokee	Clay	Cloud	Cowley	Crawford	Coffey	Davis	Dickinson	Douglas	Elk
1	Concord	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Ives	4	2	3	2												
3	Dracut Amber	2	2														
4	Clinton	3															
5	Hartford Prolific	4															
6	Norton's Virginia		5		2	3											
7	Delaware																
8	Eumelan																
9	Creveling		3														
10	Salem																
11	Taylor																
12	White Delaware																
13	Union Village																
14	Wilder																

STRAWBERRIES.

		Allen	Anderson	Atchison	Bourbon	Brown	Butler	Cherokee	Clay	Cloud	Cowley	Crawford	Coffey	Davis	Dickinson	Douglas	Elk
1	Wilson's Albany*	1	1	2	1												
2	Charles Downing	2	2		2												
3	Green Prolific	4															
4	Kentucky (late)	3															
5	Colonel Cheney		1														
6	Downer's Prol'c (early)																
7	Jucunda																
8	Triomphe de Gand																
9	Metcalf																
10	Colfax																
11	Nicanor																
12	Longworth																
13	Large Early Scarlet																
14	Monarch-of-the-West																
15	Kramer																

* Early and late.

PLUMS.

Thief for each party.	1	2	3	4	5	6	7	8	9	10
Wyandale.....	1	2	3	4	5	6	7	8	9	10
Wooden.....	1	2	3	4	5	6	7	8	9	10
Wilson.....	No report.									
Webb.....	No sufficient tried.									
Sumner.....	No sufficient tried.									
Stewart.....	1	2	3	4	5	6	7	8	9	10
Riley.....	1	2	3	4	5	6	7	8	9	10
Rice.....	1	2	3	4	5	6	7	8	9	10
Republic.....	No report.									
Remo.....	No report.									
Patterson.....	Native var. succeed.									
Pavane.....	No report.									
Osborne.....	No sufficient tried.									
Oague.....	1	2	3	4	5	6	7	8	9	10
Nouba.....	No report.									
Morris.....	No report.									
Montgomery.....	1	2	3	4	5	6	7	8	9	10
Muchall.....	No report.									
Miami.....	1	2	3	4	5	6	7	8	9	10
McPherson.....	1	2	3	4	5	6	7	8	9	10

[illegible][illegible][illegible]

VOTED FRUIT LIST—CONTINUED.

List of Varieties.		BLACKBERRIES.																
		Allen	Anderson	Atchison	Burton	Brown	Butler	Cherokee	Cloud	Cluy	Cocley	Coffey	Crawford	Deats	Dickinson	Douglas	Ellsworth	Franklin
1	Kittatinny.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Lawton	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	Wilson's Early.....																	
4	Missouri Mammoth.....																	
5	Crystal White.....																3	
6	Western Triumph.....																2	
7	Dorchester.....																	
8	Native varieties.....															3		

RASPBERRIES.

1	Doolittle (early).....	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Miami (middle).....	2				2	1	2	1	2	1	1	2	1	2	2	2	2
3	McCormick (late).....	1						1	2									
4	Philadelphia (red).....	4		2			2										3	
5	Purple Cane (red).....			3													3	
6	Davison's Thornless.....															3		
7	Herstine.....																4	
8	Native varieties.....										1							

GOOSEBERRIES.

1	Houghton.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Pale Red.....	2					1					2				2		
3	Downing.....							1								2		
4	Mountain.....	3														3		

CURRANTS.

1	Large Red Dutch.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	White Grape.....			2									2	2	3		2	
3	White Dutch.....	3	2			2							2	2	2		2	2
4	Black Naples.....	1		1										3		1		
5	Cherry.....													4				
6	Black English.....															2		
7	La Versailles.....																	
8	Victoria.....																	

VOTED FRUIT LIST—CONCLUDED.

BLACKBERRIES.

	McPherson.....	Miami.....	Mitchell.....	Montgomery.....	Morris.....	Neesho.....	Oake.....	Osborne.....	Prairie.....	Potomac.....	Reno.....	Republic.....	Rice.....	Riley.....	Shawnee.....	Summer.....	Wabash.....	Wilson.....	Woodson.....	Wyandale.....	Total vote given each variety.....
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	41
2																					20
3		2																			3
4										3											2
5																					2
6						2															1
7																					1
8										4											1

RASPBERRIES.

1			2				1		2		1	1		2		2	1	2	2	25
2			1						1					1		1	2	1	17	
3	1	1									2	2	1		1	1	1	4	14	
4	2																		6	
5									4										4	
6									3								3		4	
7																			2	
8						2													2	

GOOSEBERRIES.

1	1	1	1	1		1	1		1	1	1	1	1	1	1	1	1	1	2		40
2																			1		6
3		2								2											5
4										3											3

CURRANTS.

1	1	2	1						1		1					1		1		20
2		1	2							3		2								9
3										2								2		9
4									1	4								3		7
5																				2
6			3																	2
7										5										1
8										6										1

FORESTRY AND ORNAMENTALS—CONCLUDED.

S. for success of varieties; F. for failure in each county; T. for a tolerable success.

[illegible]

ORNAMENTALS.

[illegible]

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